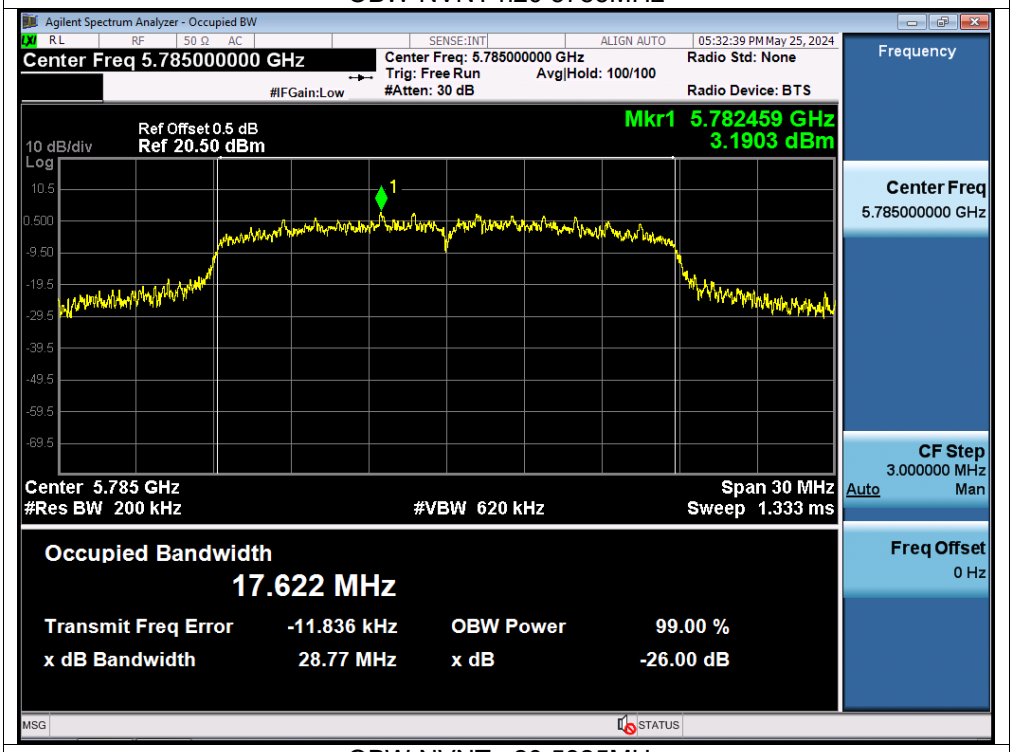
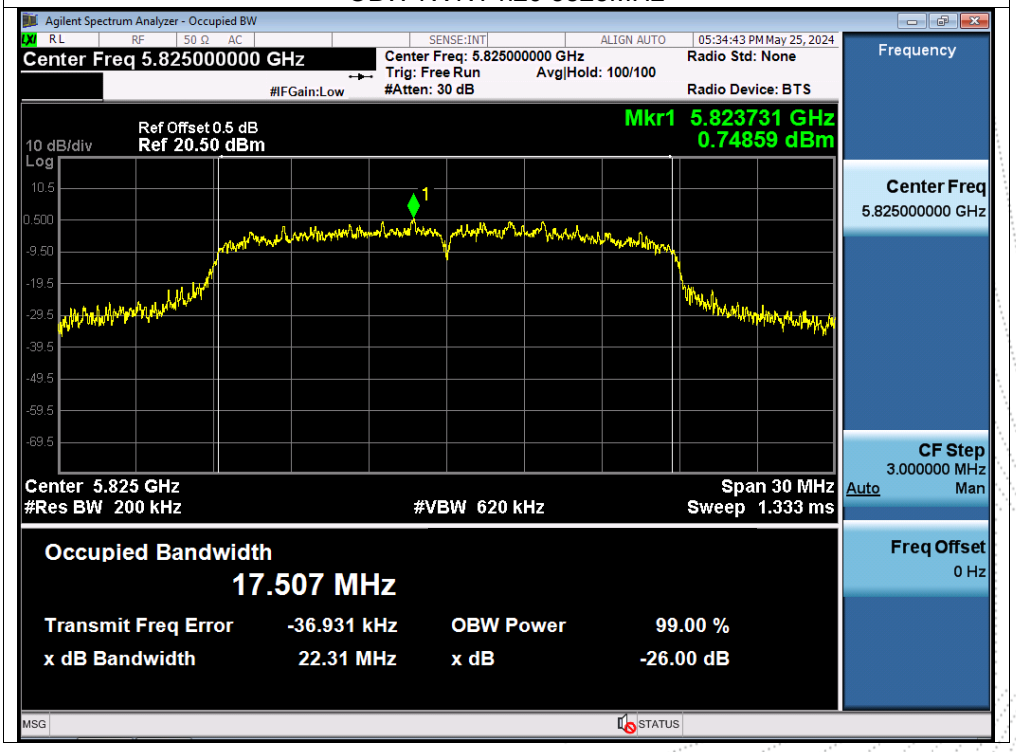
OBW NVNT n20 5785MHz

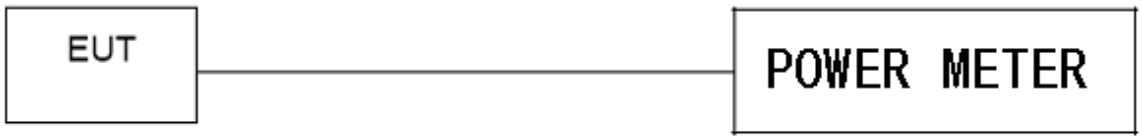


OBW NVNT n20 5825MHz



10. Maximum Conducted Output Power

10.1 Block Diagram Of Test Setup



10.2 Limit

According to FCC §15.407
The maximum conduced output power should not exceed:

Frequency Band(MHz)	Limit
5150~5250	0.25W
5250~5350	0.25W
5500~5700	0.25W
5725~5850	1W

10.3 Test Procedure

Maximum conducted output power may be measured using a spectrum analyzer/EMI receiver or an RF power meter.

1. Device Configuration
If possible, configure or modify the operation of the EUT so that it transmits continuously at its maximum power control level (see section II.B.).
a) The intent is to test at 100 percent duty cycle; however a small reduction in duty cycle (to no lower than 98 percent) is permitted if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.
b) If continuous transmission (or at least 98 percent duty cycle) cannot be achieved due to hardware limitations (e.g., overheating), the EUT shall be operated at its maximum power control level with the transmit duration as long as possible and the duty cycle as high as possible.

2. Measurement using a Spectrum Analyzer or EMI Receiver (SA)
Measurement of maximum conducted output power using a spectrum analyzer requires integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the 99-percent occupied bandwidth of the signal.1 However, the EBW must be used to determine bandwidth dependent limits on maximum conducted output power in accordance with § 15.407(a).
a) The test method shall be selected as follows: (i) Method SA-1 or SA-1 Alternative (averaging with the EUT transmitting at full power throughout each sweep) shall be applied if either of the following conditions can be satisfied:
• The EUT transmits continuously (or with a duty cycle ≥ 98 percent).
• Sweep triggering or gating can be implemented in a way that the device transmits at the maximum power control level throughout the duration of each of the instrument sweeps to be averaged. This condition can generally be achieved by triggering the instrument's sweep if the duration of the sweep (with the analyzer configured as in Method SA-1, below) is equal to or shorter than the duration T of each transmission from the EUT and if those transmissions exhibit full power throughout their durations.

(ii) Method SA-2 or SA-2 Alternative (averaging across on and off times of the EUT transmissions, followed by duty cycle correction) shall be applied if the conditions of (i) cannot be achieved and the transmissions exhibit a constant duty cycle during the measurement duration. Duty cycle will be considered to be constant if variations are less than ± 2 percent.

(iii) Method SA-3 (RMS detection with max hold) or SA-3 Alternative (reduced VBW with max hold) shall be applied if the conditions of (i) and (ii) cannot be achieved.

b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep): (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
(ii) Set RBW = 1 MHz.
(iii) Set VBW ≥ 3 MHz.
(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
(v) Sweep time = auto.
(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run”.
(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum

10.4 EUT Operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

10.5 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 5V
Test Mode:	5180-5240MHz		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	9.9	24	Pass
NVNT	a	5200	10.48	24	Pass
NVNT	a	5240	10.03	24	Pass
NVNT	n20	5180	10.81	24	Pass
NVNT	n20	5200	10.89	24	Pass
NVNT	n20	5240	10.75	24	Pass

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 5V
Test Mode:	5260-5320MHz		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5260	11.06	24	Pass
NVNT	a	5280	11.6	24	Pass
NVNT	a	5320	11.93	24	Pass
NVNT	n20	5260	10.4	24	Pass
NVNT	n20	5280	10.82	24	Pass
NVNT	n20	5320	11.72	24	Pass

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 5V
Test Mode:	5500-5700MHz		

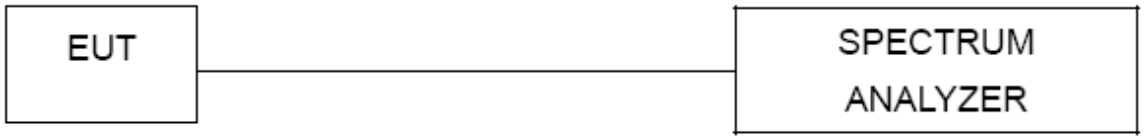
Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5500	11.57	24	Pass
NVNT	a	5580	12.83	24	Pass
NVNT	a	5700	10.61	24	Pass
NVNT	n20	5500	11.41	24	Pass
NVNT	n20	5580	12.53	24	Pass
NVNT	n20	5700	10.62	24	Pass

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 5V
Test Mode:	5745-5825MHz		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	11.08	30	Pass
NVNT	a	5785	11.45	30	Pass
NVNT	a	5825	11.46	30	Pass
NVNT	n20	5745	10.51	30	Pass
NVNT	n20	5785	10.58	30	Pass
NVNT	n20	5825	8.55	30	Pass

11. Out Of Band Emissions

11.1 Block Diagram Of Test Setup



11.2 Limit

According to FCC §15.407(b)
Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(2) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing

11.3 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

11.4 EUT Operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data

11.5 Test Result

5180-5240 MHz

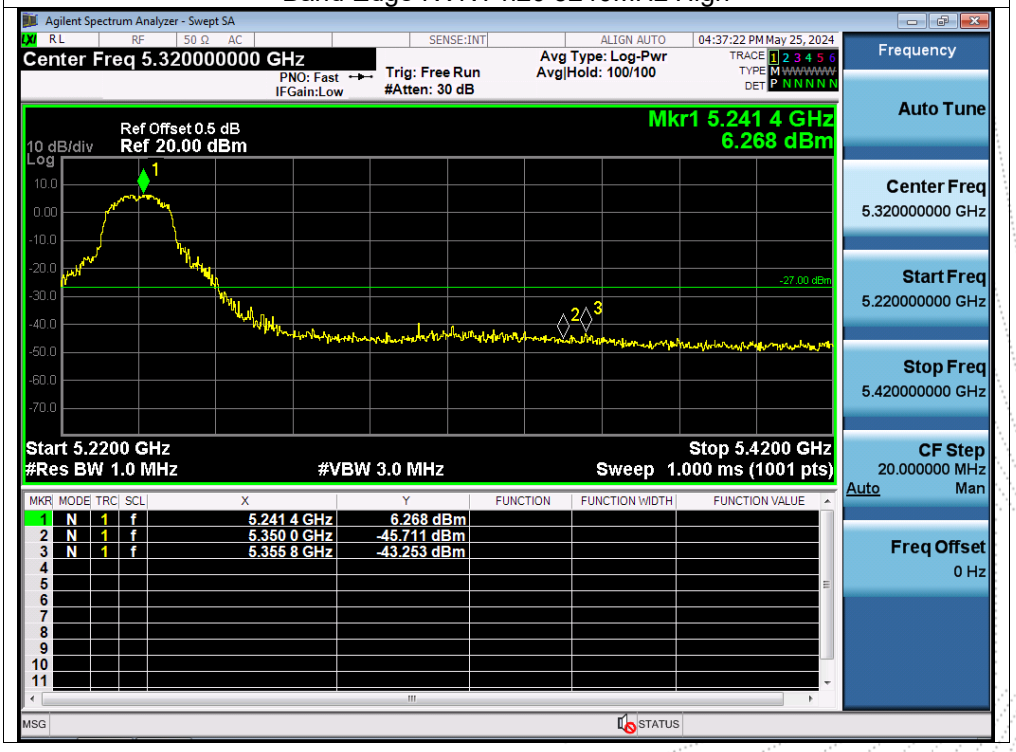
Test Graphs

Band Edge NVNT a 5180MHz Low

Band Edge NVNT a 5240MHz High

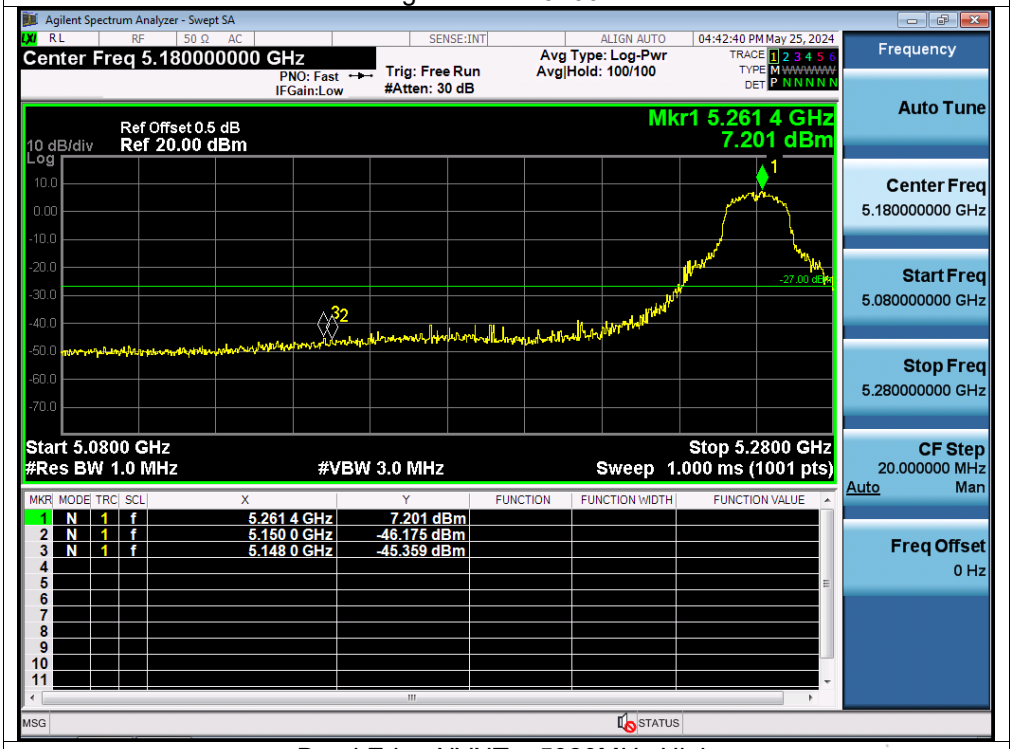
Band Edge NVNT n20 5180MHz Low

Band Edge NVNT n20 5240MHz High

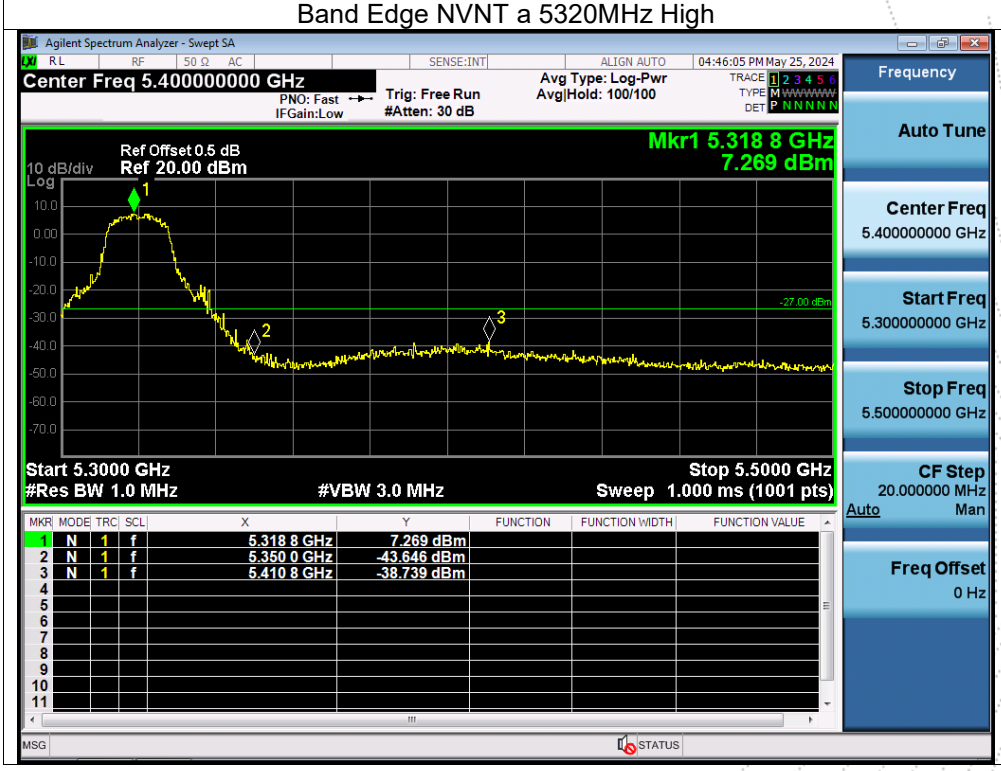


5260-5320MHz

Test Graphs
Band Edge NVNT a 5260MHz Low

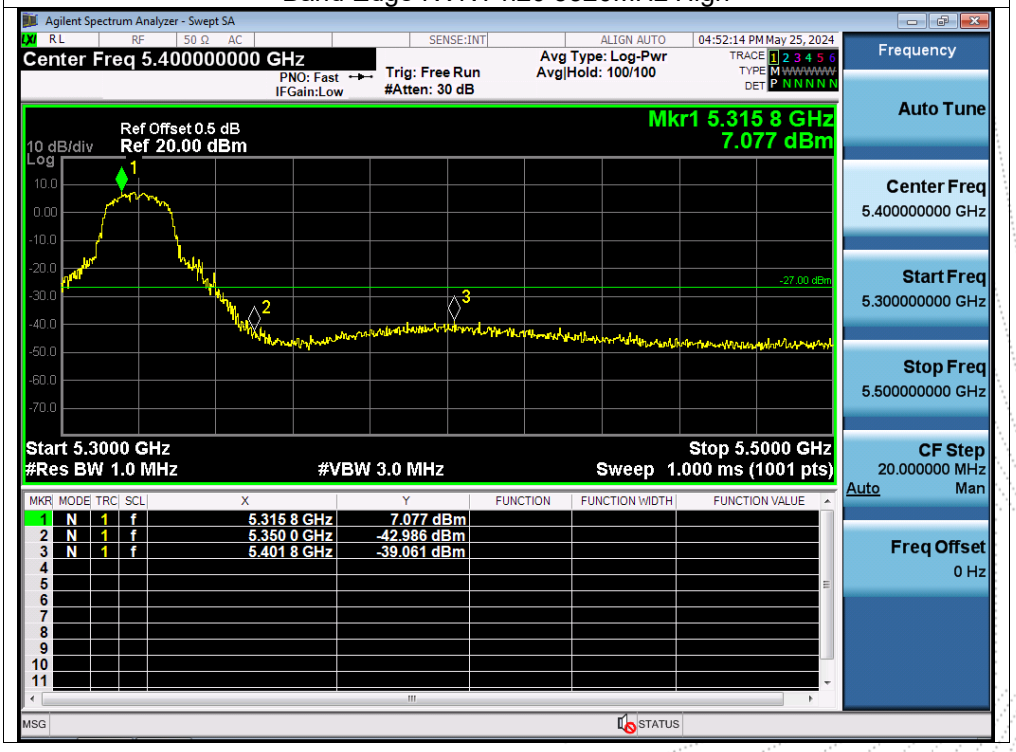


Band Edge NVNT a 5320MHz High



Band Edge NVNT n20 5260MHz Low

Band Edge NVNT n20 5320MHz High

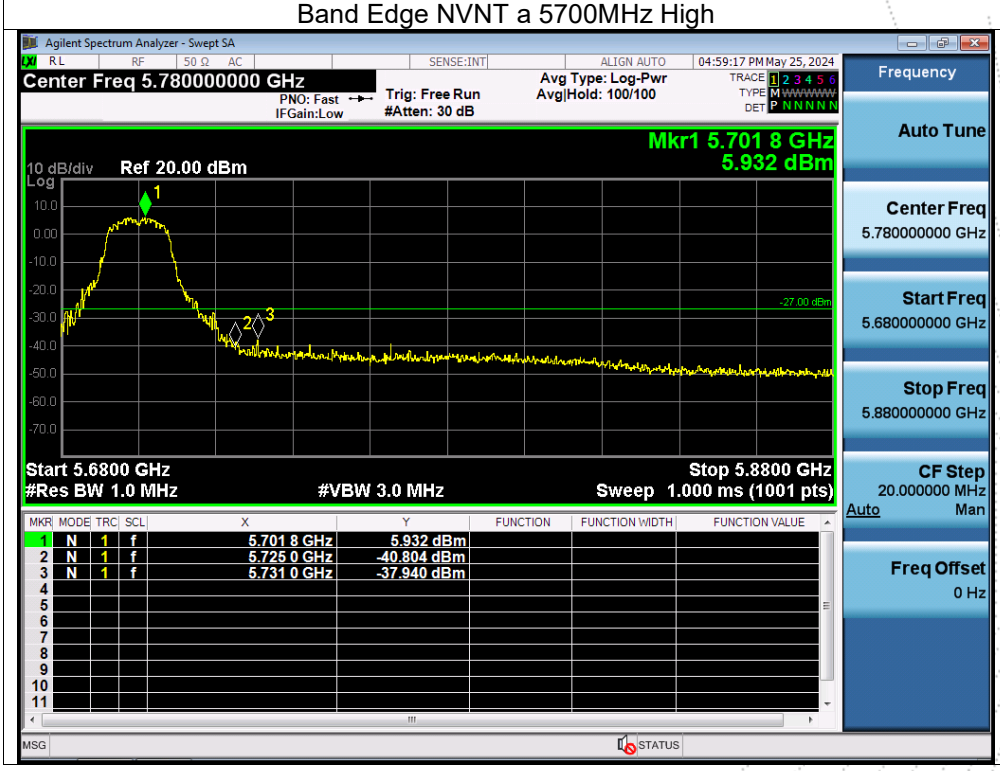


5500-5700MHz

Test Graphs

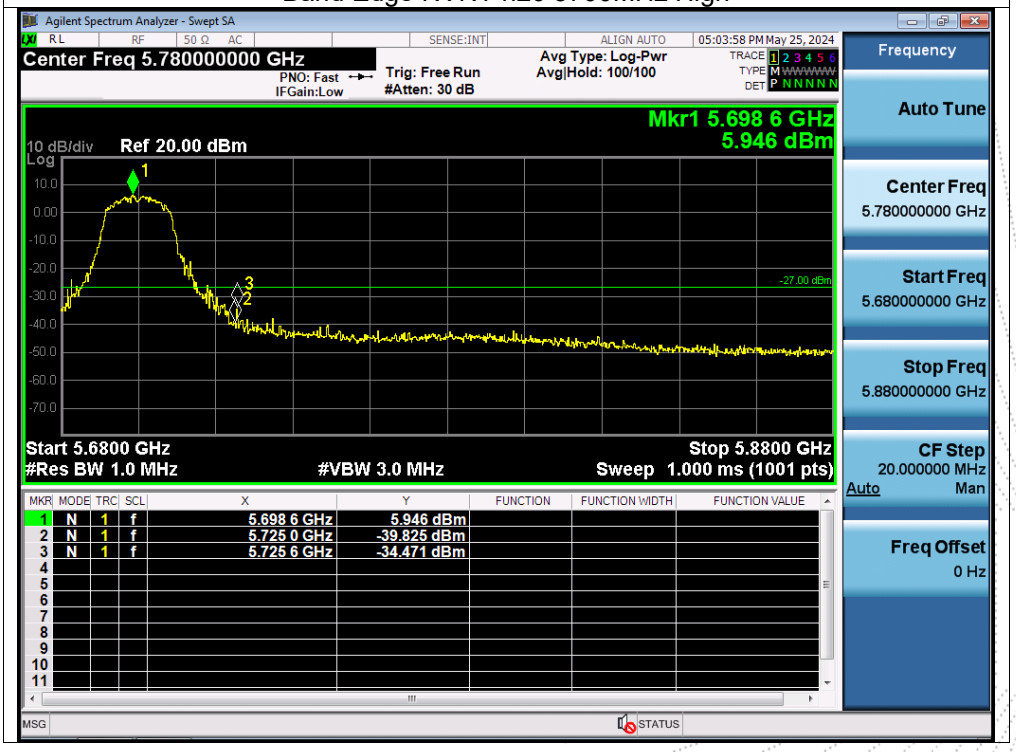
Band Edge NVNT a 5500MHz Low

Band Edge NVNT a 5700MHz High



Band Edge NVNT n20 5500MHz Low

Band Edge NVNT n20 5700MHz High



5745-5825MHz

Test Graphs
Band Edge NVNT a 5745MHz Low

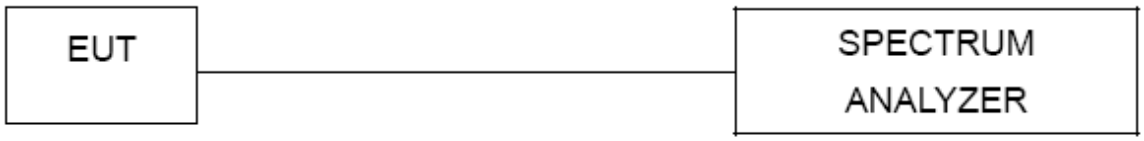
Band Edge NVNT a 5825MHz High

Band Edge NVNT n20 5745MHz Low

Band Edge NVNT n20 5825MHz High

12. Spurious RF Conducted Emissions

12.1 Block Diagram Of Test Setup



12.2 Limit

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
(1)For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(2)For transmitters operating in the 5.725-5.85 GHz band(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge..
(3)For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4)For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

12.3 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

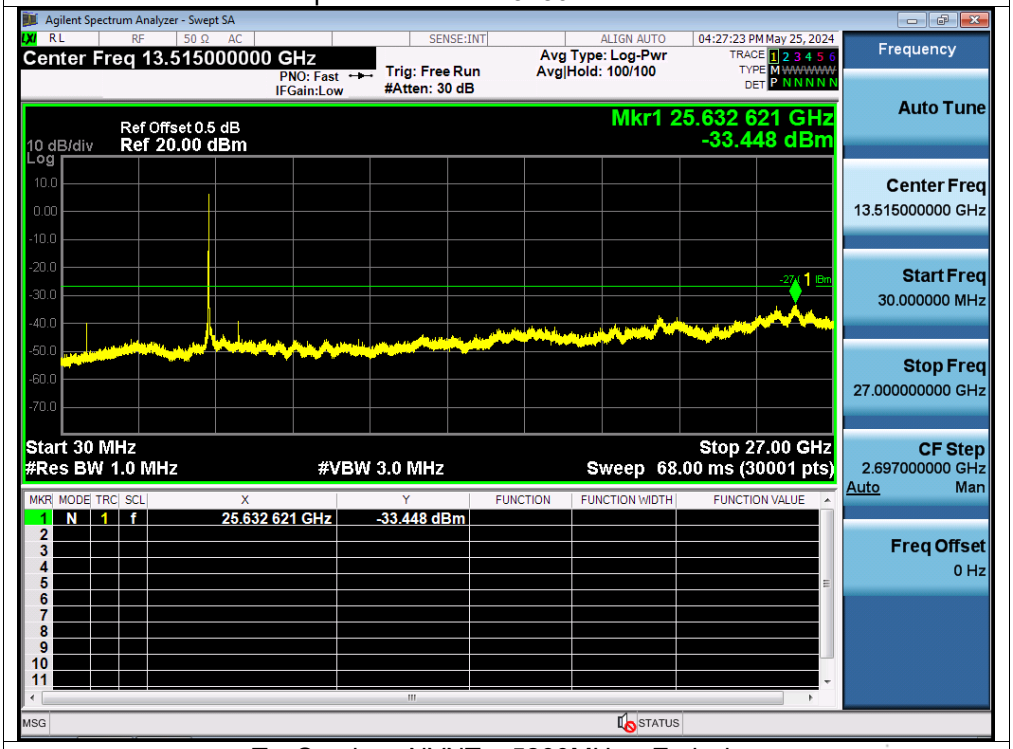
12.4 Test Result

Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandege measurement data.
About:26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

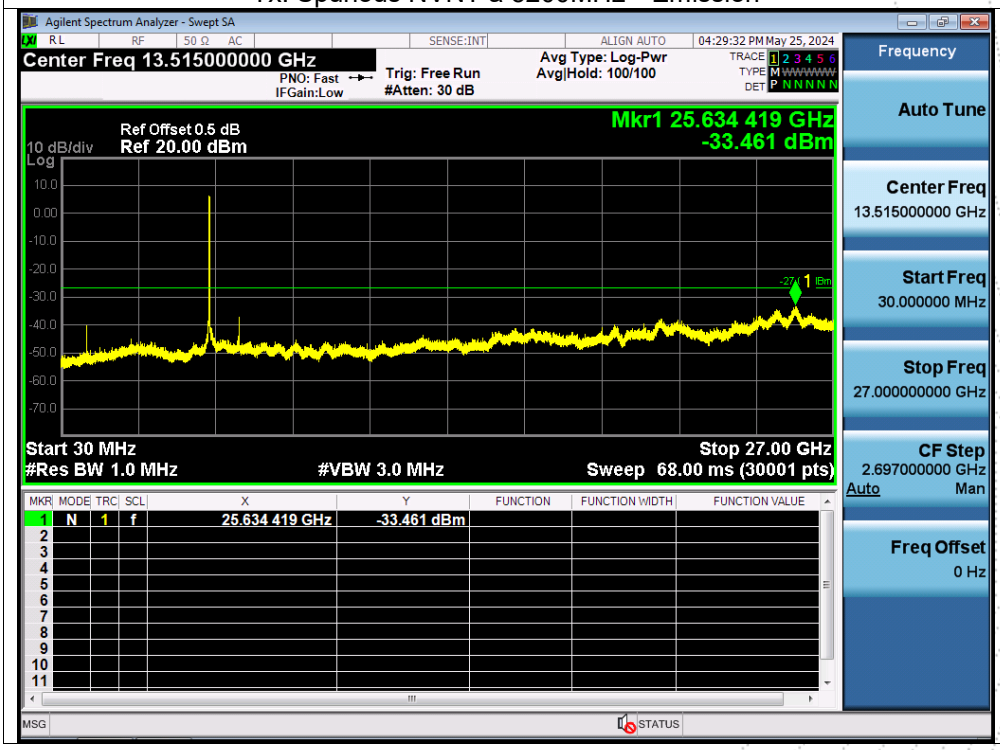
5180-5240 MHz

Test Graphs

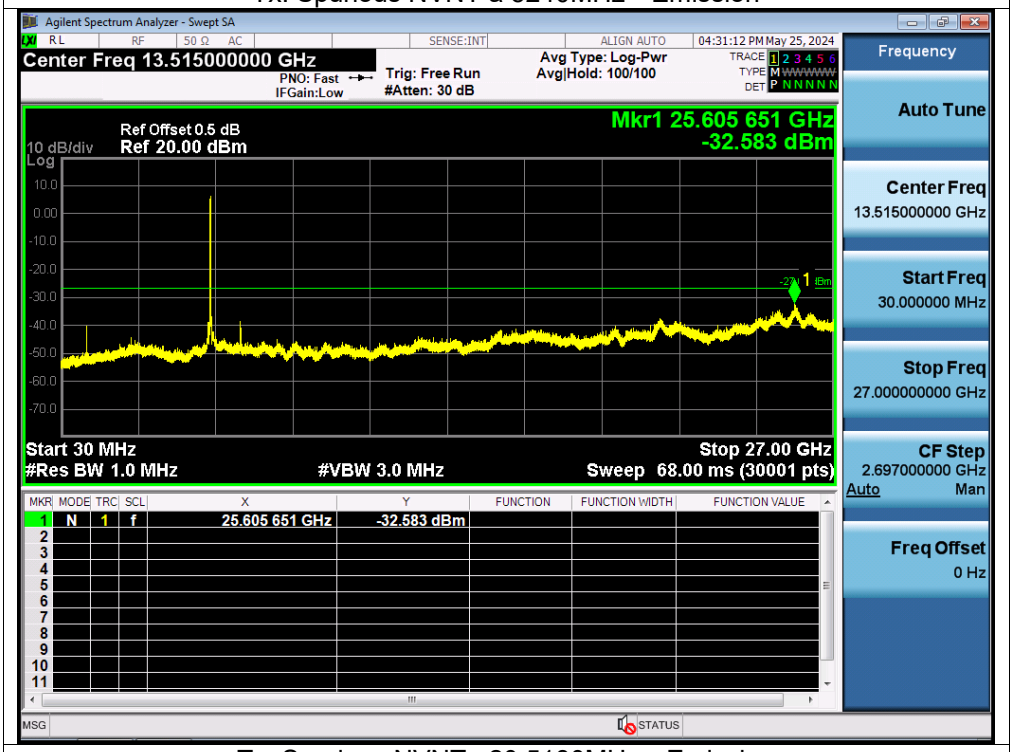
Tx. Spurious NVNT a 5180MHz Emission



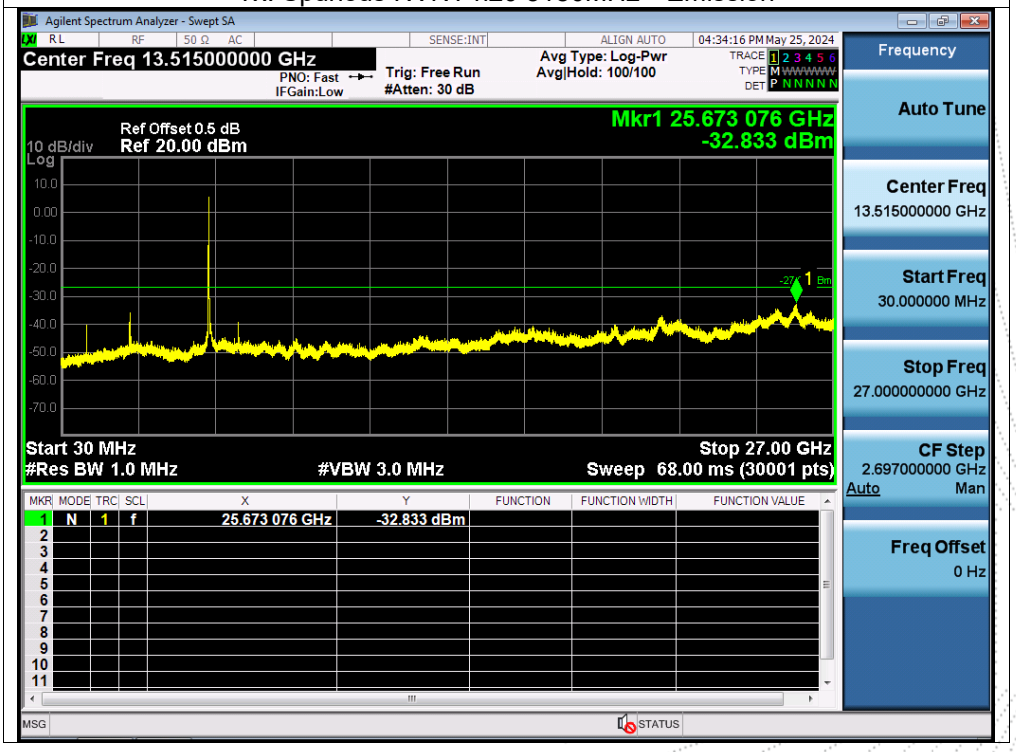
Tx. Spurious NVNT a 5200MHz Emission



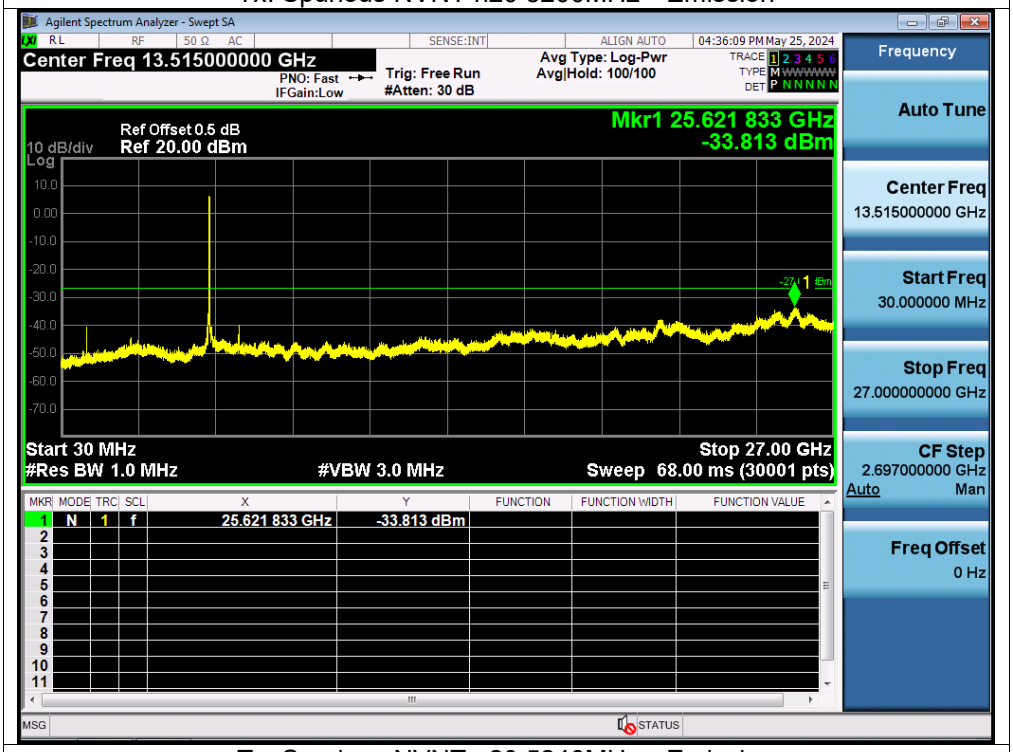
Tx. Spurious NVNT a 5240MHz Emission



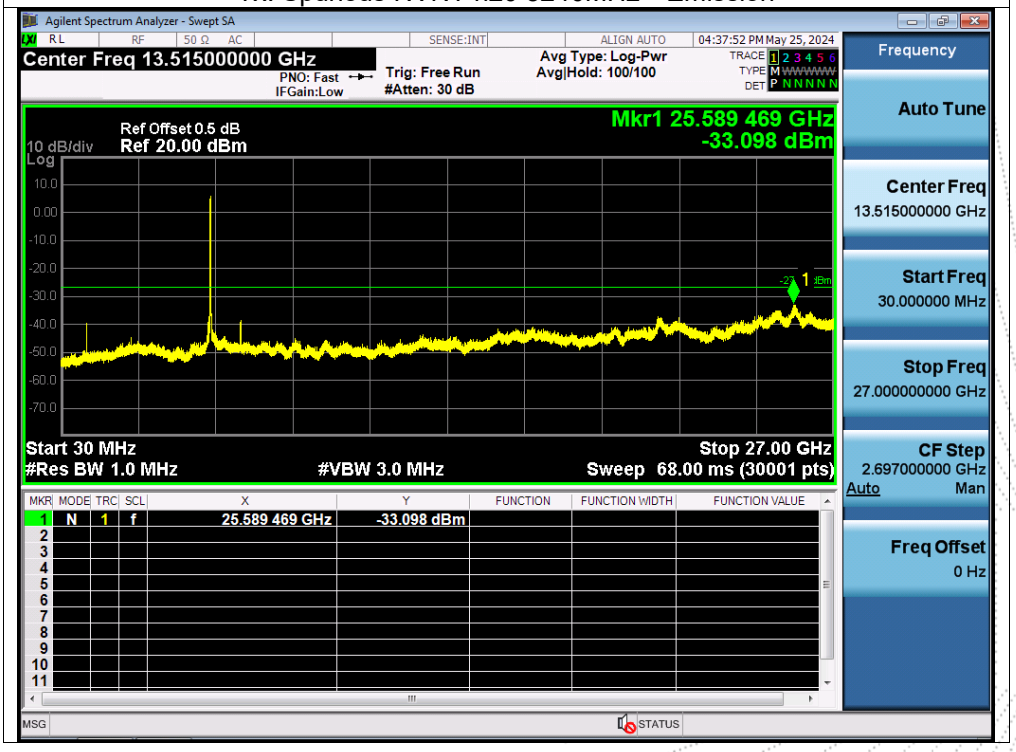
Tx. Spurious NVNT n20 5180MHz Emission



Tx. Spurious NVNT n20 5200MHz Emission



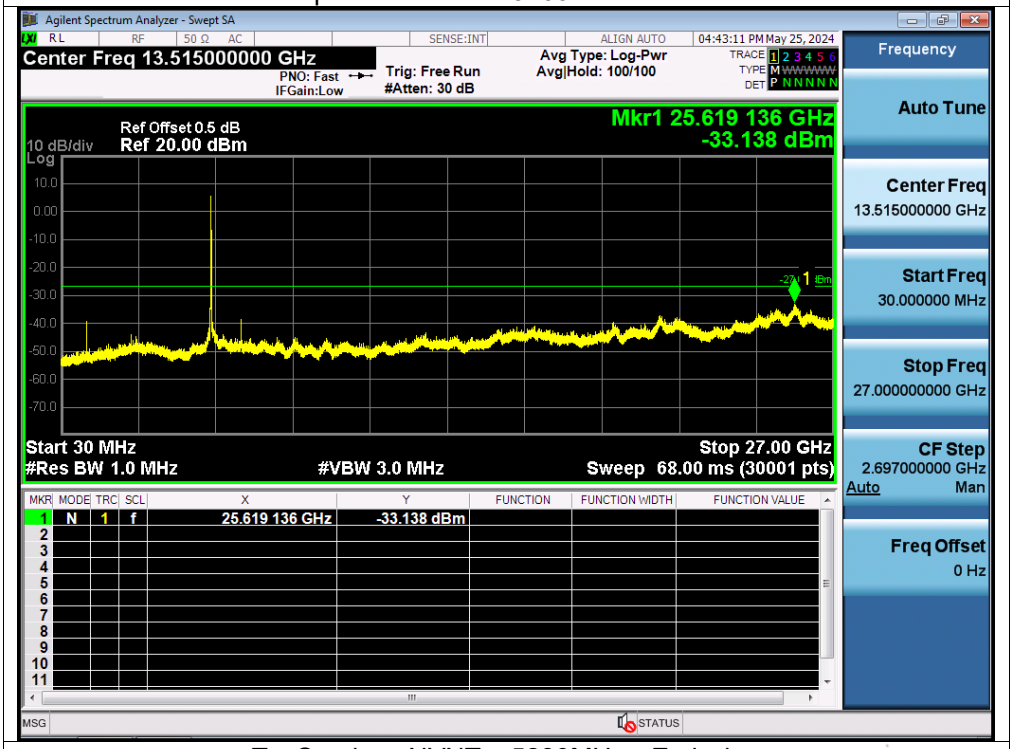
Tx. Spurious NVNT n20 5240MHz Emission



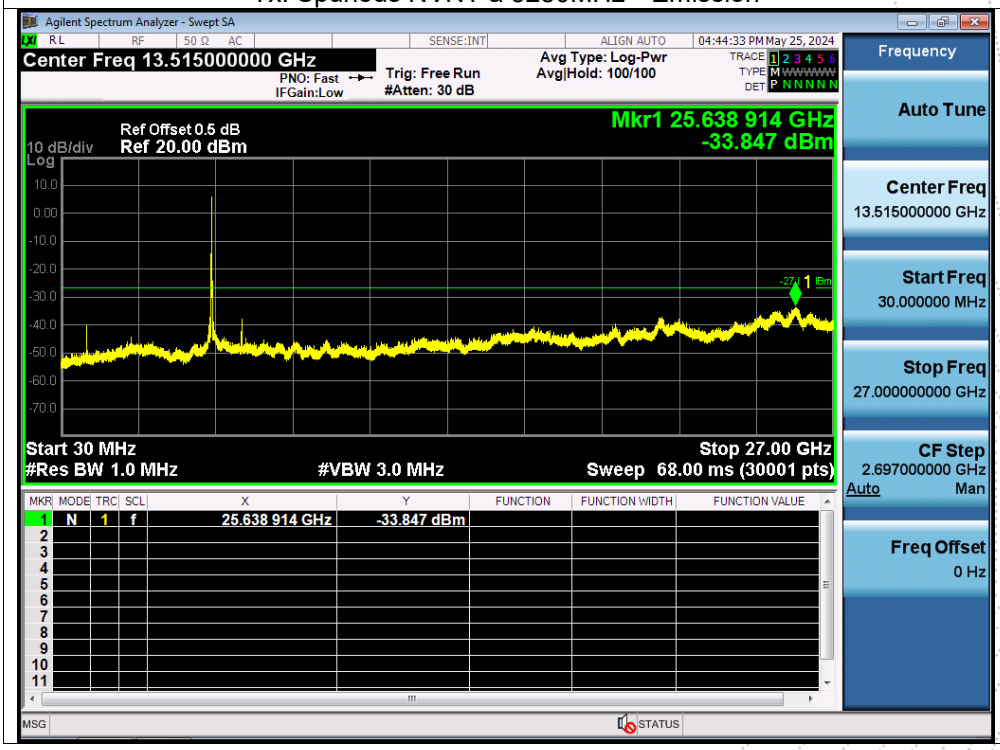
5260-5320MHz

Test Graphs

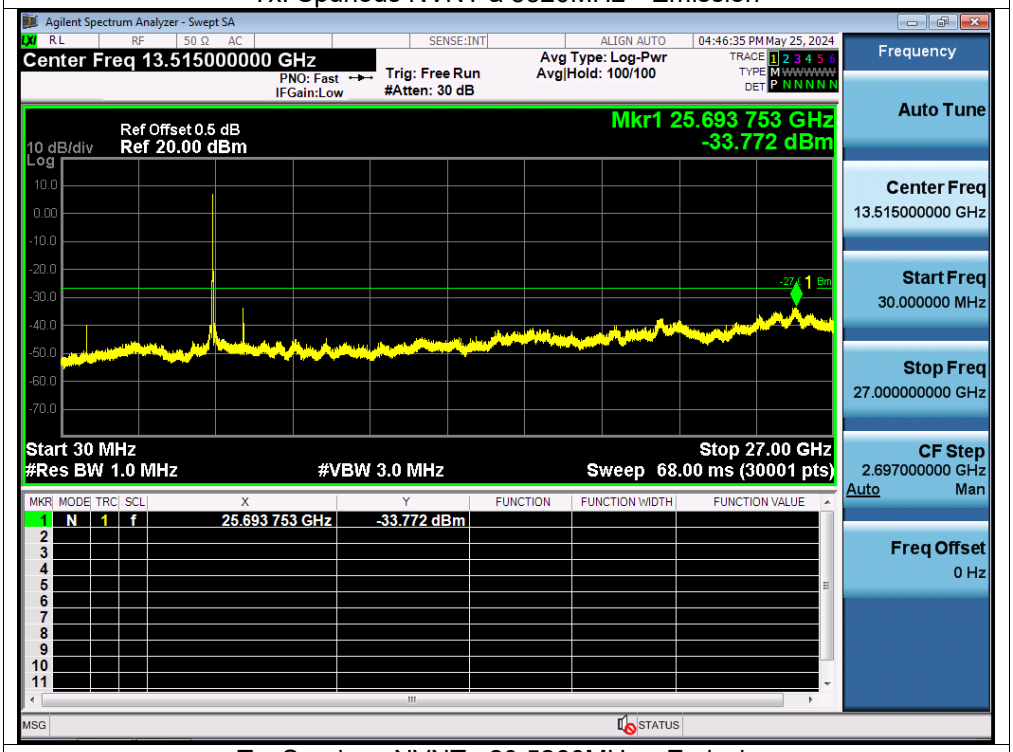
Tx. Spurious NVNT a 5260MHz Emission



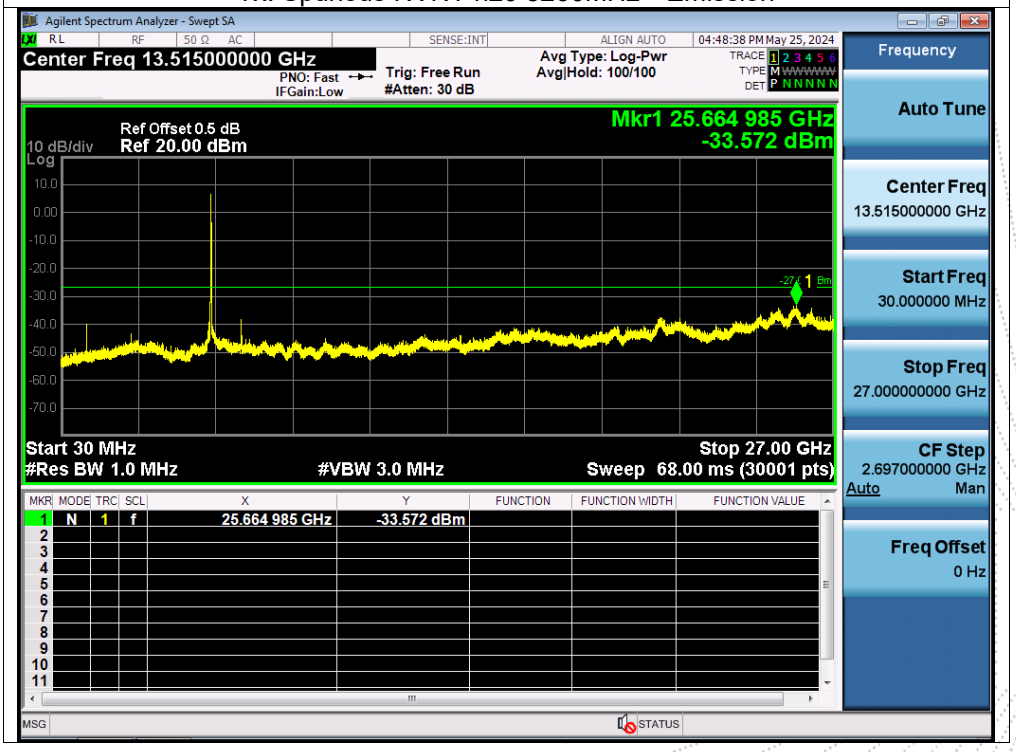
Tx. Spurious NVNT a 5280MHz Emission



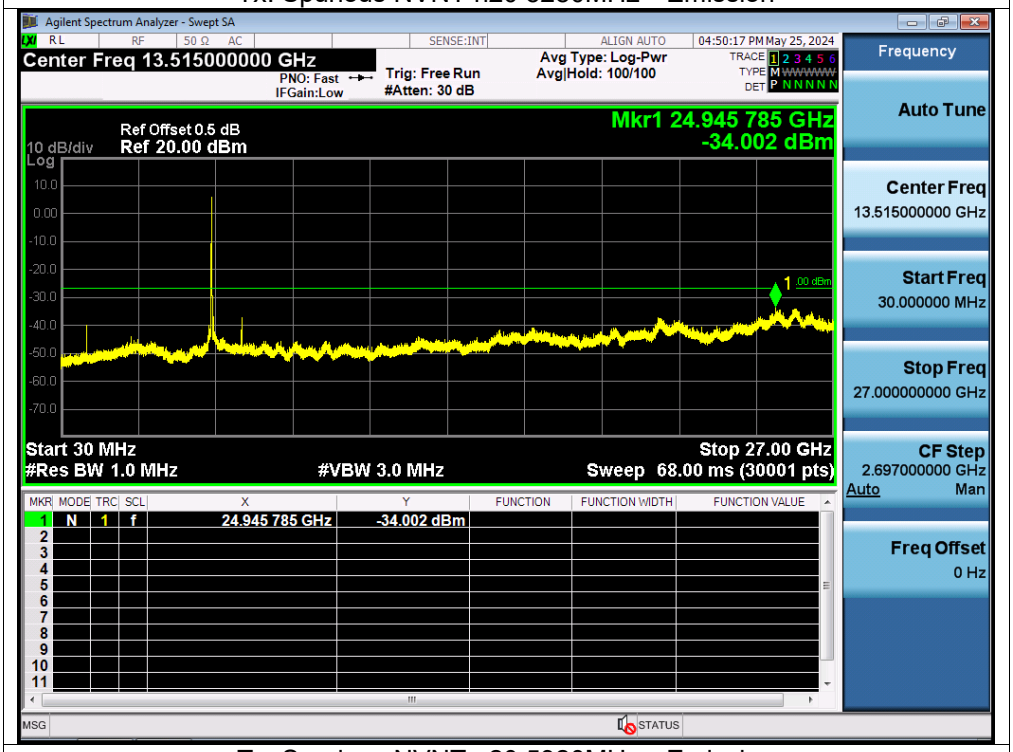
Tx. Spurious NVNT a 5320MHz Emission



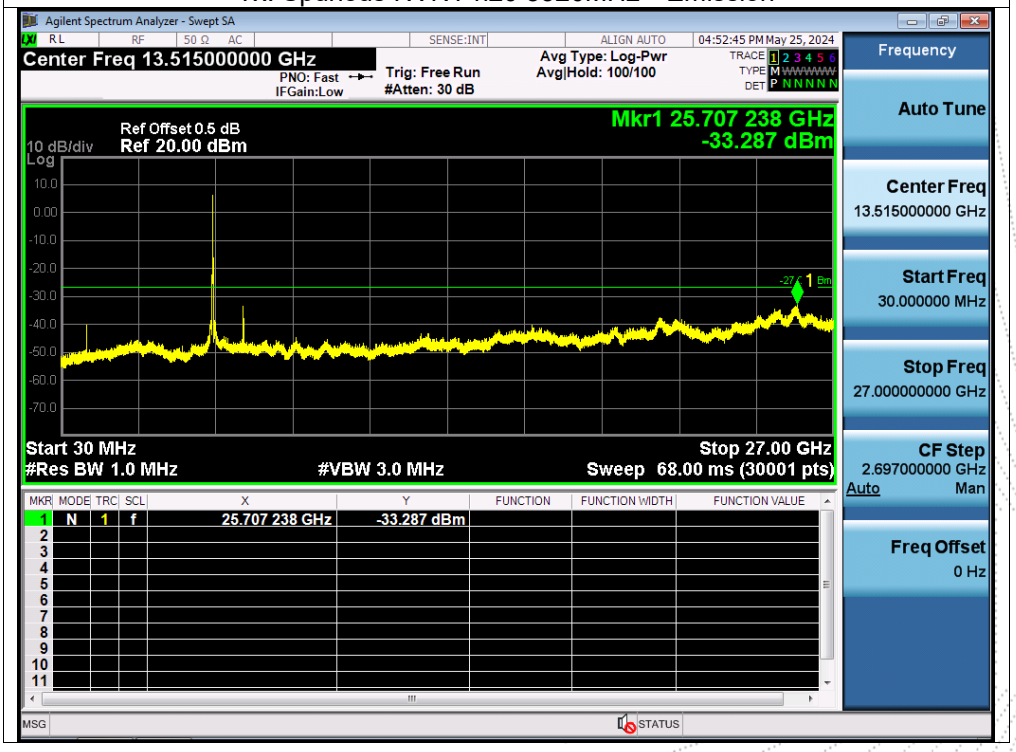
Tx. Spurious NVNT n20 5260MHz Emission



Tx. Spurious NVNT n20 5280MHz Emission



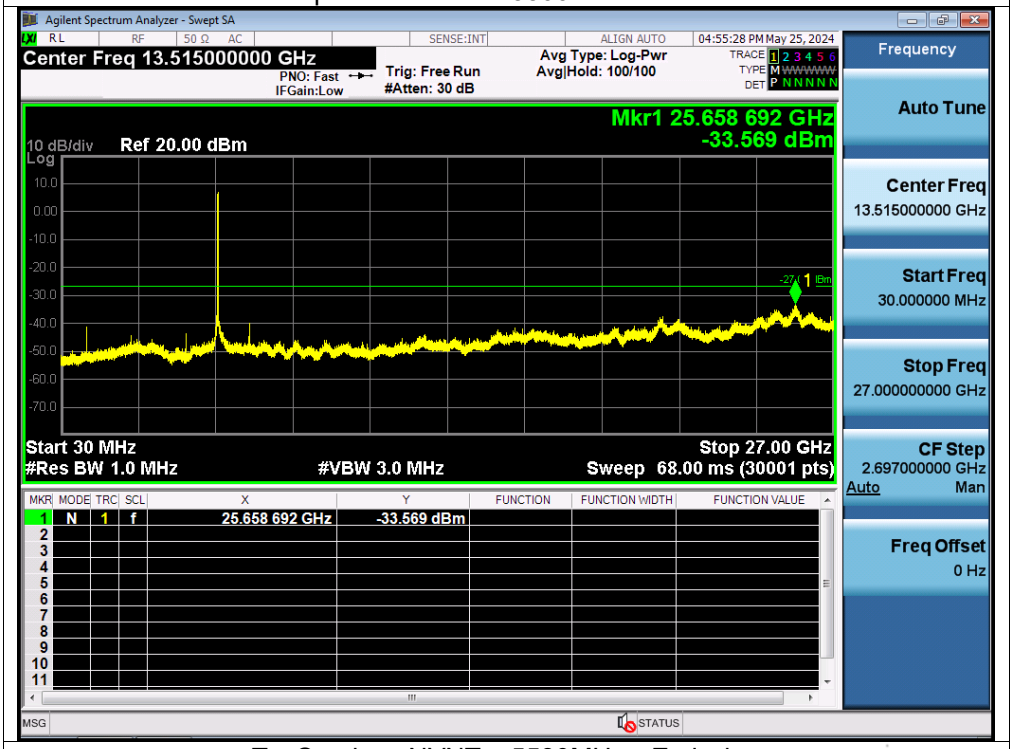
Tx. Spurious NVNT n20 5320MHz Emission



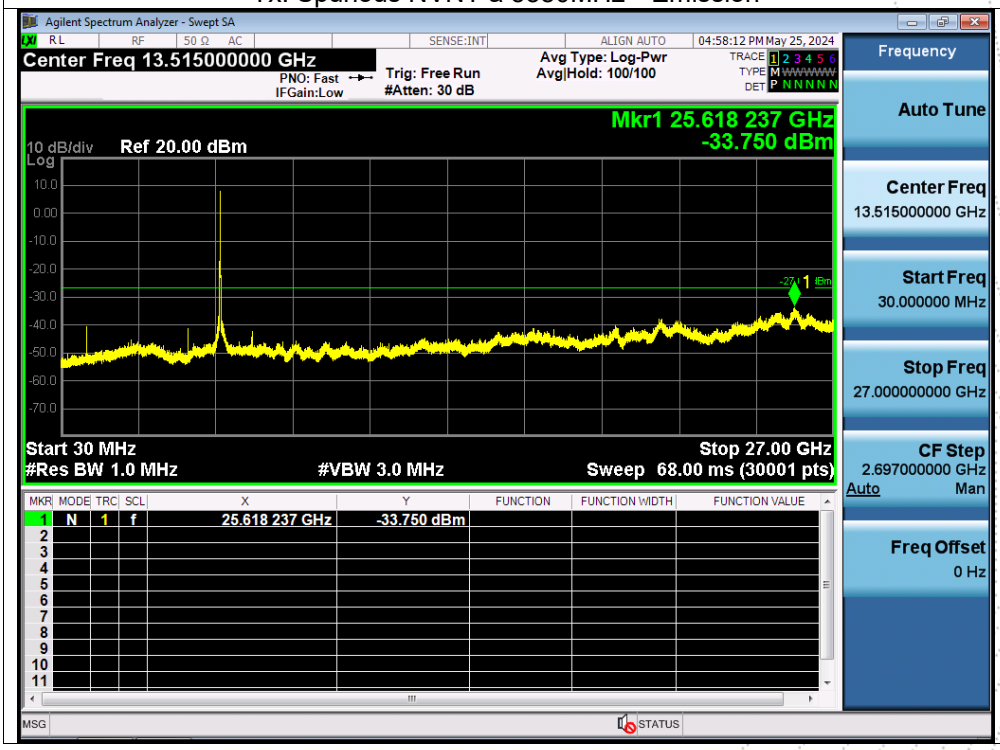
5500-5700 MHz

Test Graphs

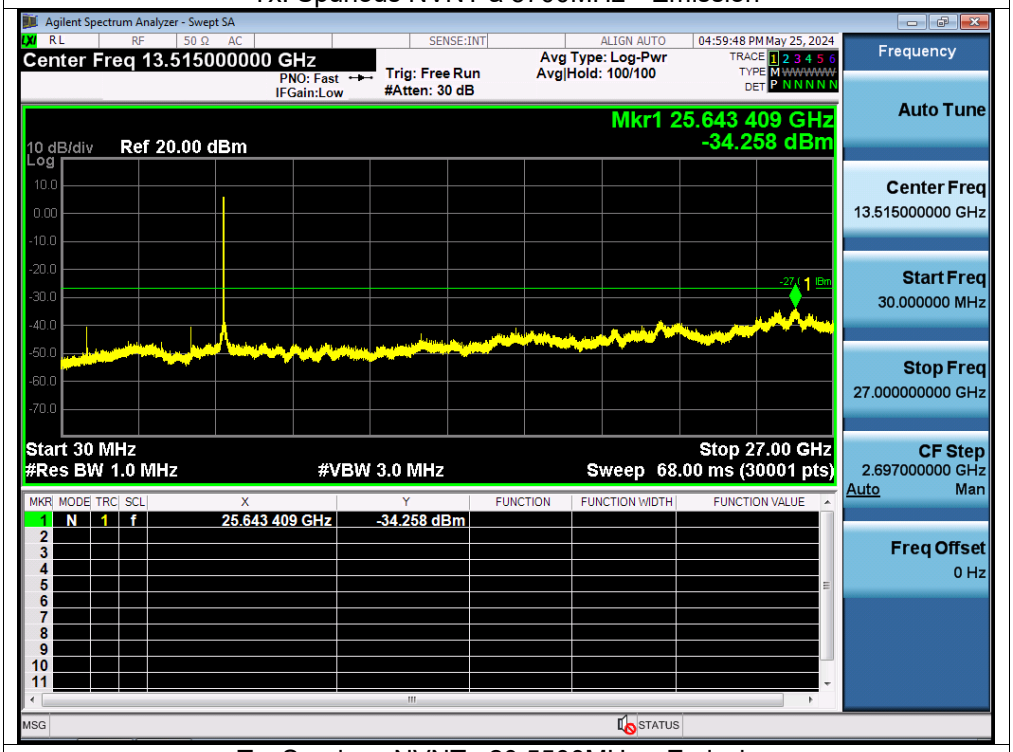
Tx. Spurious NVNT a 5500MHz Emission



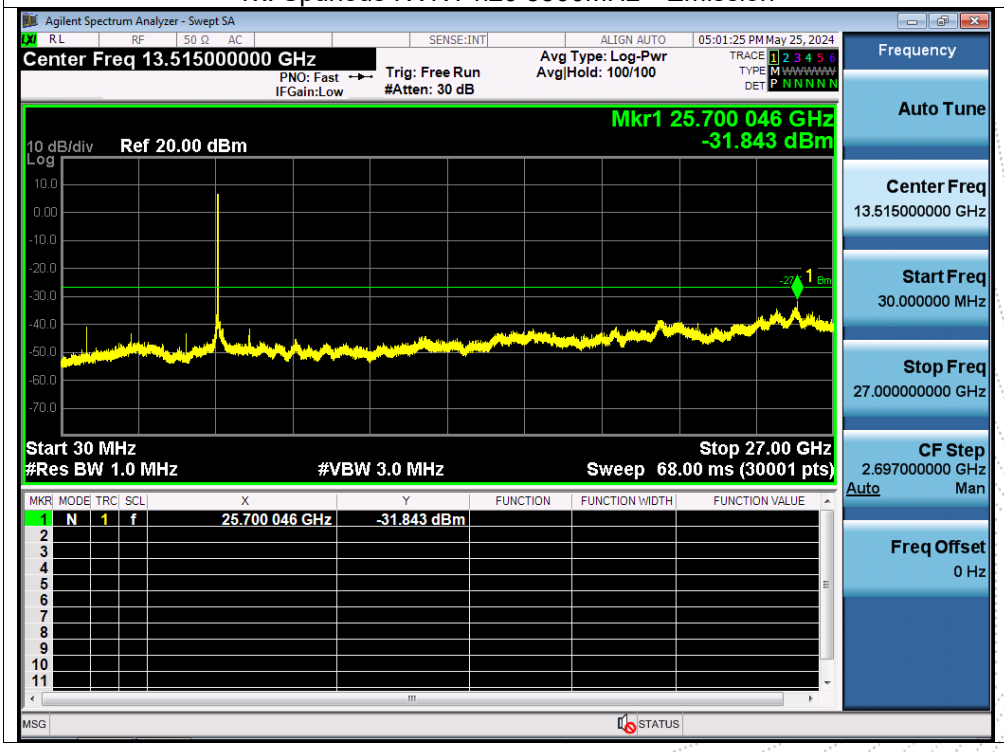
Tx. Spurious NVNT a 5580MHz Emission



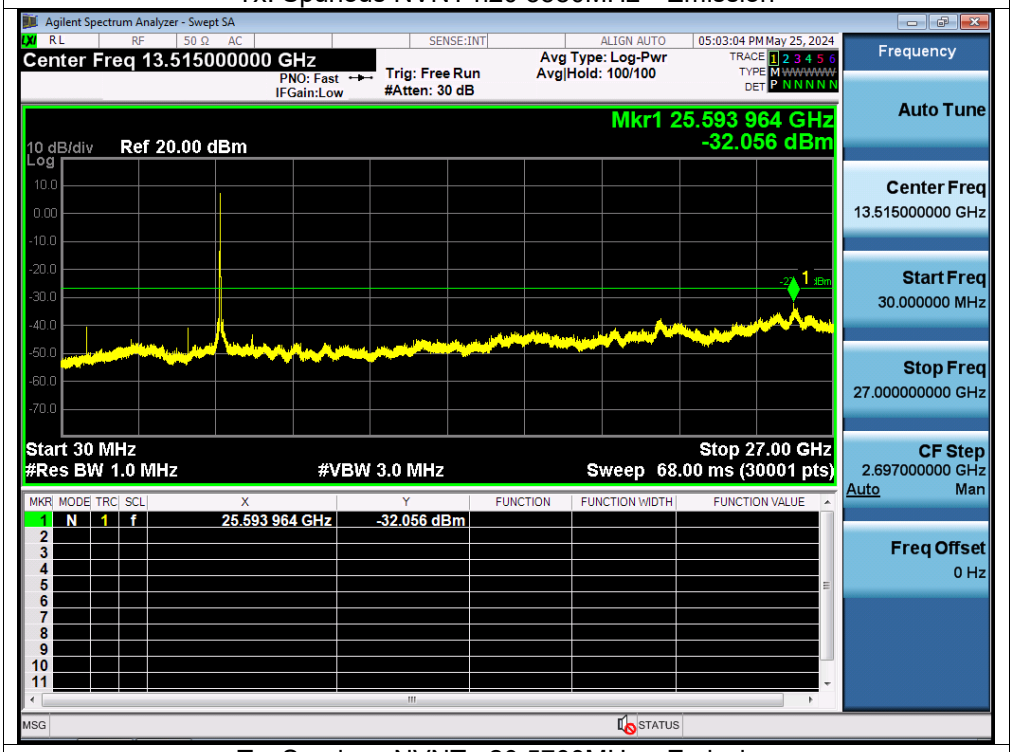
Tx. Spurious NVNT a 5700MHz Emission



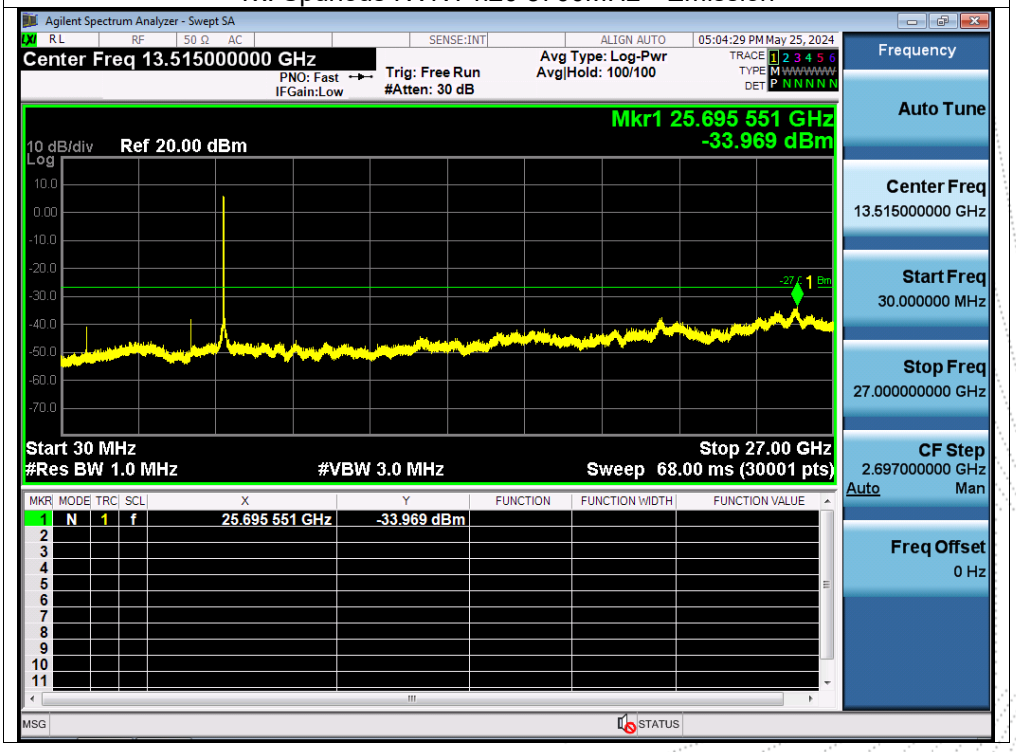
Tx. Spurious NVNT n20 5500MHz Emission



Tx. Spurious NVNT n20 5580MHz Emission



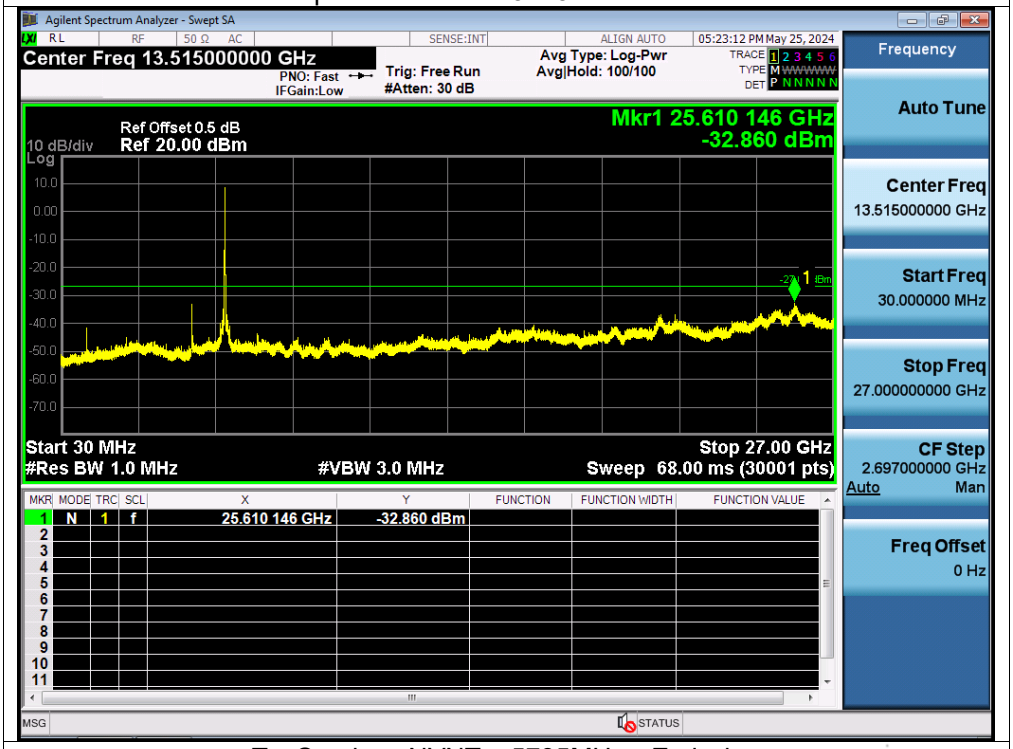
Tx. Spurious NVNT n20 5700MHz Emission



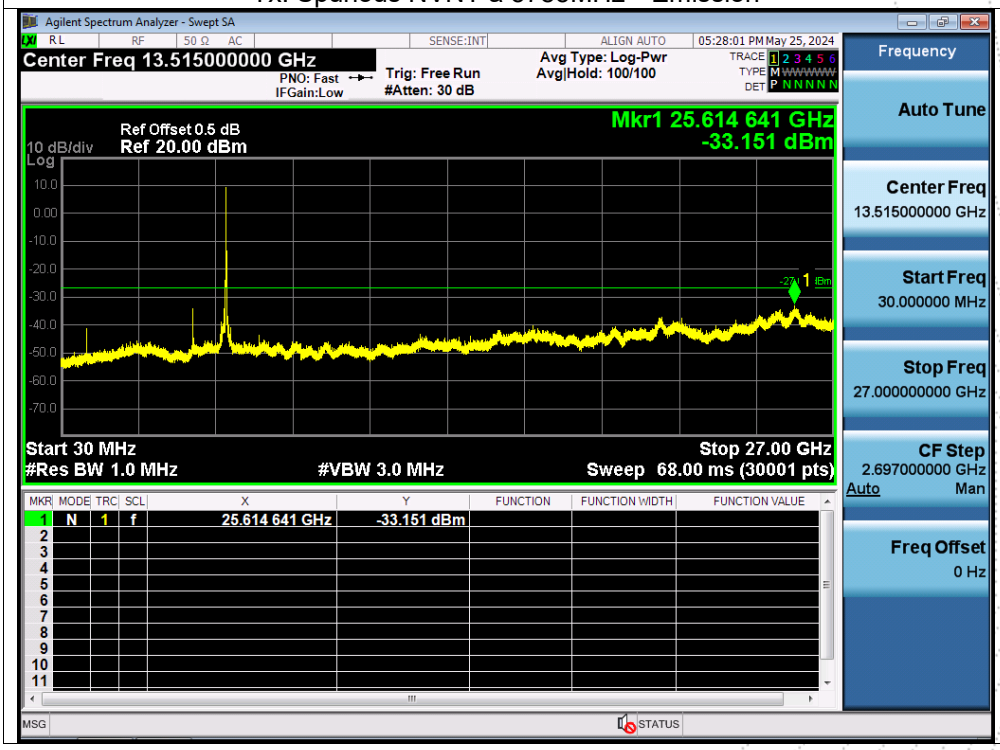
5745-5825 MHz

Test Graphs

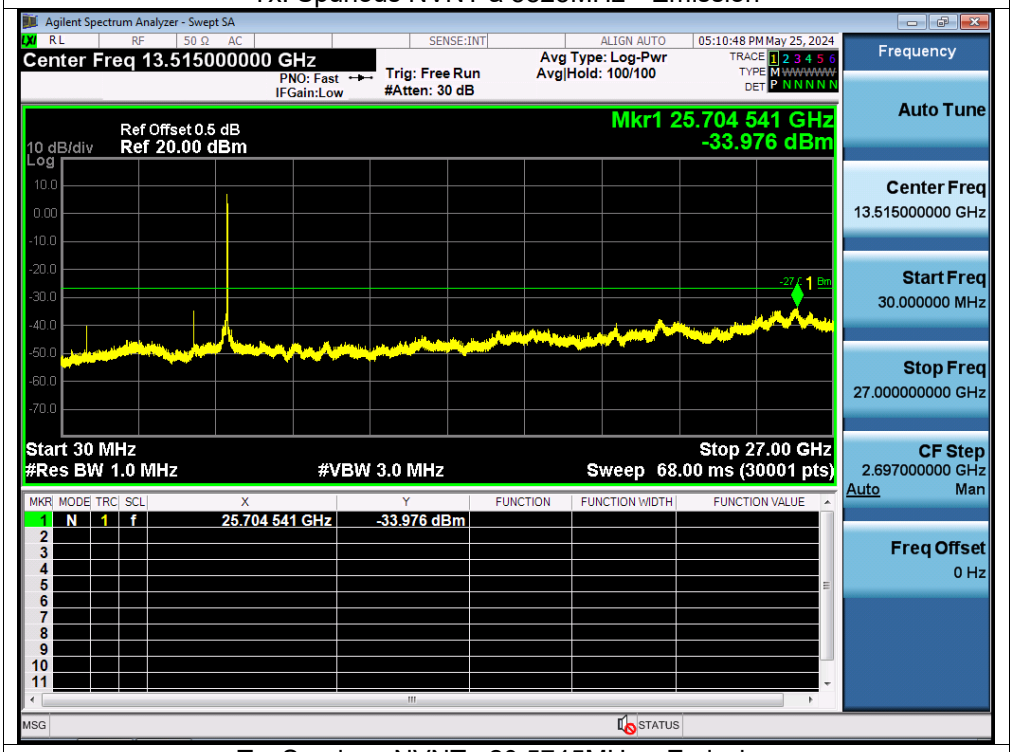
Tx. Spurious NVNT a 5745MHz Emission



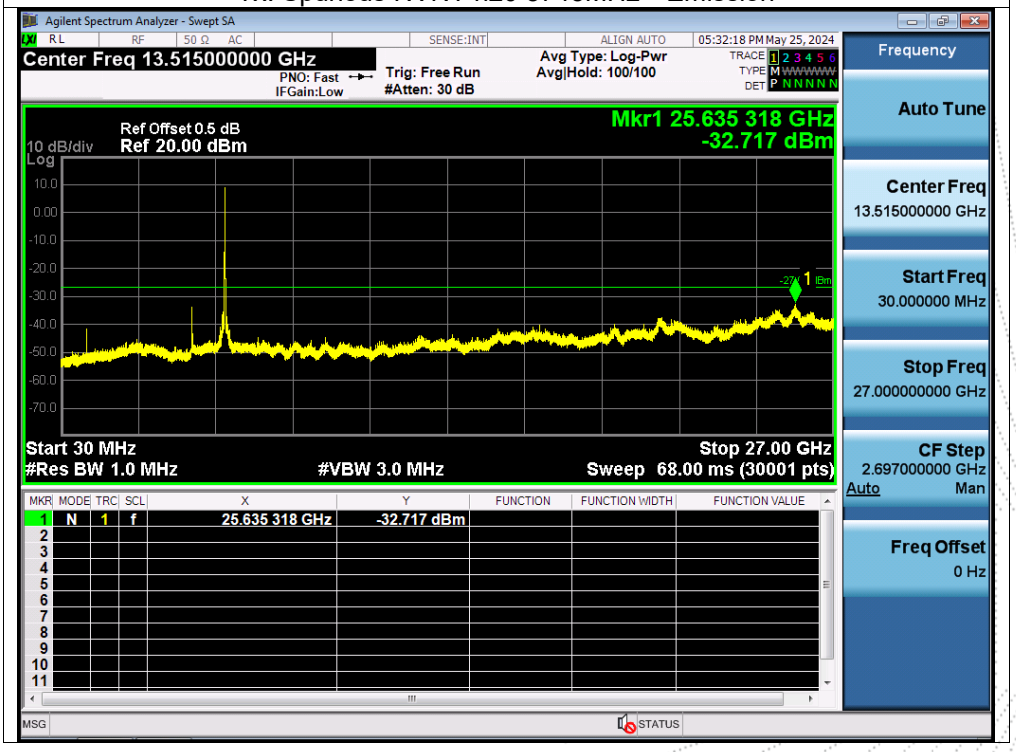
Tx. Spurious NVNT a 5785MHz Emission



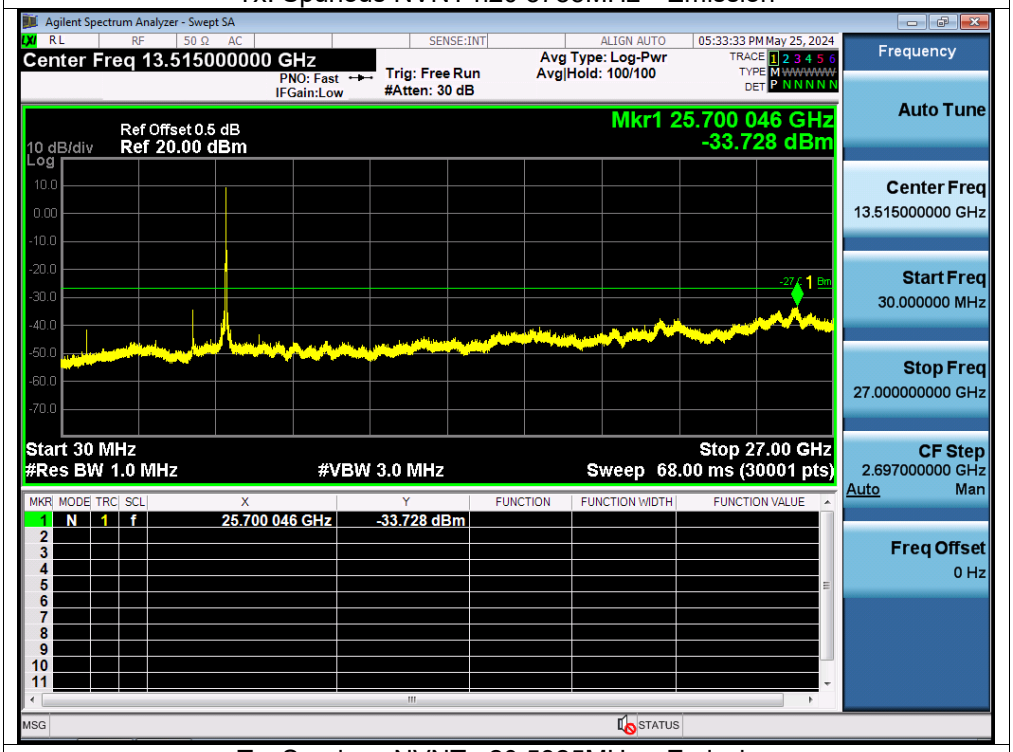
Tx. Spurious NVNT a 5825MHz Emission



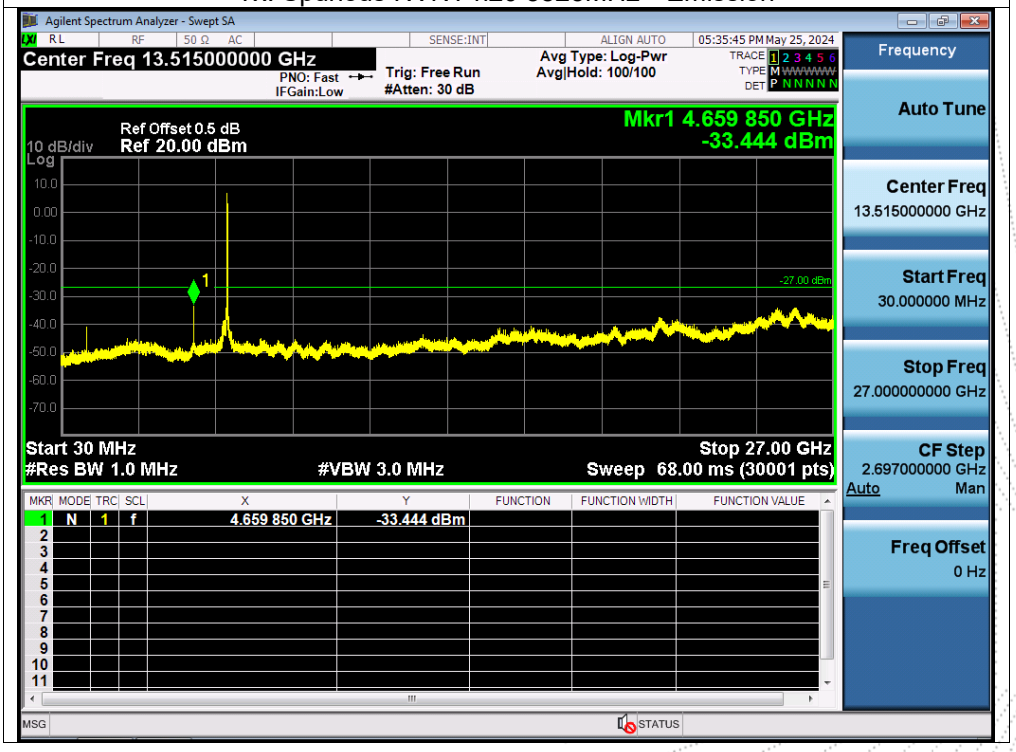
Tx. Spurious NVNT n20 5745MHz Emission



Tx. Spurious NVNT n20 5785MHz Emission

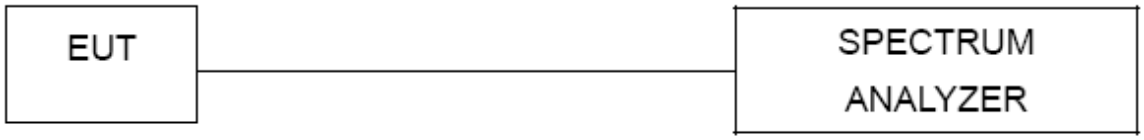


Tx. Spurious NVNT n20 5825MHz Emission



13. Frequency Stability Measurement

13.1 Block Diagram Of Test Setup



13.2 Limit

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.
The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification)..

13.3 Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 106 ppm and he limit is less than ±20ppm (IEEE 802.11nspecification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is -20°C~70°C.

13.4 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 5V
Test Mode:	TX (5.1G) Mode Frequency U-NII-1 (5180-5240MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5180.0132	5180	0.0132	2.5483
		V max (V)	5.75	5180.0072	5180	0.0072	1.3900
		V min (V)	4.25	5180.0083	5180	0.0083	1.6023
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5180.0115	5180	0.0115	2.2201
		T (°C)	-10	5180.0031	5180	0.0031	0.5985
		T (°C)	0	5180.0081	5180	0.0081	1.5637
		T (°C)	10	5180.0120	5180	0.0120	2.3166
		T (°C)	20	5180.0092	5180	0.0092	1.7761
		T (°C)	30	5180.0005	5180	0.0005	0.0965
		T (°C)	40	5180.0012	5180	0.0012	0.2317
		T (°C)	50	5180.0112	5180	0.0112	2.1622
		T (°C)	60	5180.0112	5180	0.0112	2.1622
		T (°C)	70	5180.0135	5180	0.0135	2.6062
Limits				5150-5250 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5200.0002	5200	0.0002	0.0385
		V max (V)	5.75	5200.0064	5200	0.0064	1.2308
		V min (V)	4.25	5200.0038	5200	0.0038	0.7308
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5200.00320	5200	0.00320	0.6154
		T (°C)	-10	5200.00130	5200	0.00130	0.2500
		T (°C)	0	5200.00280	5200	0.00280	0.5385
		T (°C)	10	5200.01350	5200	0.01350	2.5962
		T (°C)	20	5200.00730	5200	0.00730	1.4038
		T (°C)	30	5200.00060	5200	0.00060	0.1154
		T (°C)	40	5200.01130	5200	0.01130	2.1731
		T (°C)	50	5200.00680	5200	0.00680	1.3077
		T (°C)	60	5200.00240	5200	0.00240	0.4615
		T (°C)	70	5200.01320	5200	0.01320	2.5385
Limits				5150-5250 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5240.0118	5240	0.0118	2.2519
		V max (V)	5.75	5240.0125	5240	0.0125	2.3855
		V min (V)	4.25	5240.0001	5240	0.0001	0.0191
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5240.0076	5240	0.0076	1.4504
		T (°C)	-10	5240.0006	5240	0.0006	0.1145
		T (°C)	0	5240.0092	5240	0.0092	1.7557
		T (°C)	10	5240.0104	5240	0.0104	1.9847
		T (°C)	20	5240.0083	5240	0.0083	1.5840
		T (°C)	30	5240.0099	5240	0.0099	1.8893
		T (°C)	40	5240.0119	5240	0.0119	2.2710
		T (°C)	50	5240.0055	5240	0.0055	1.0496
		T (°C)	60	5240.0084	5240	0.0084	1.6031
		T (°C)	70	5240.0068	5240	0.0068	1.2977
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 5V
Test Mode:	TX (5.3G) Mode Frequency U-NII-2A (5260-5320MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5260MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5260.0037	5260	0.0037	0.7034
		V max (V)	5.75	5260.0027	5260	0.0027	0.5133
		V min (V)	4.25	5260.0096	5260	0.0096	1.8251
Limits				5260-5320 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5260MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5260.0038	5260	0.0038	0.7224
		T (°C)	-10	5260.0080	5260	0.0080	1.5209
		T (°C)	0	5260.0050	5260	0.0050	0.9506
		T (°C)	10	5260.0099	5260	0.0099	1.8821
		T (°C)	20	5260.0129	5260	0.0129	2.4525
		T (°C)	30	5260.0100	5260	0.0100	1.9011
		T (°C)	40	5260.0049	5260	0.0049	0.9316
		T (°C)	50	5260.0016	5260	0.0016	0.3042
		T (°C)	60	5260.0031	5260	0.0031	0.5894
		T (°C)	70	5260.0036	5260	0.0036	0.6844
Limits				5260-5320 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5280MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5280.0035	5280	0.0035	0.6629
		V max (V)	5.75	5280.0065	5280	0.0065	1.2311
		V min (V)	4.25	5280.0110	5280	0.0110	2.0833
Limits				5260-5320 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5280MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5280.00690	5280	0.00690	1.3068
		T (°C)	-10	5280.01000	5280	0.01000	1.8939
		T (°C)	0	5280.00840	5280	0.00840	1.5909
		T (°C)	10	5280.00250	5280	0.00250	0.4735
		T (°C)	20	5280.00730	5280	0.00730	1.3826
		T (°C)	30	5280.01330	5280	0.01330	2.5189
		T (°C)	40	5280.00960	5280	0.00960	1.8182
		T (°C)	50	5280.01220	5280	0.01220	2.3106
		T (°C)	60	5280.00240	5280	0.00240	0.4545
		T (°C)	70	5280.01290	5280	0.01290	2.4432
Limits				5260-5320 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5320MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5320.0021	5320	0.0021	0.3947
		V max (V)	5.75	5320.0066	5320	0.0066	1.2406
		V min (V)	4.25	5320.0007	5320	0.0007	0.1316
Limits				5260-5320 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5320MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5320.0087	5320	0.0087	1.6353
		T (°C)	-10	5320.0100	5320	0.0100	1.8797
		T (°C)	0	5320.0080	5320	0.0080	1.5038
		T (°C)	10	5320.0055	5320	0.0055	1.0338
		T (°C)	20	5320.0004	5320	0.0004	0.0752
		T (°C)	30	5320.0127	5320	0.0127	2.3872
		T (°C)	40	5320.0068	5320	0.0068	1.2782
		T (°C)	50	5320.0097	5320	0.0097	1.8233
		T (°C)	60	5320.0015	5320	0.0015	0.2820
		T (°C)	70	5320.0129	5320	0.0129	2.4248
Limits				5260-5320 MHz			
Result				Complies			

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 5V
Test Mode:	TX (5.6G) Mode Frequency U-NII-2C (5500-5700MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5500MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5500.0073	5500	0.0073	1.3273
		V max (V)	5.75	5500.0031	5500	0.0031	0.5636
		V min (V)	4.25	5500.0025	5500	0.0025	0.4545
Limits				5500-5700 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5500MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5500.0071	5500	0.0071	1.2909
		T (°C)	-10	5500.0082	5500	0.0082	1.4909
		T (°C)	0	5500.0069	5500	0.0069	1.2545
		T (°C)	10	5500.0112	5500	0.0112	2.0364
		T (°C)	20	5500.0116	5500	0.0116	2.1091
		T (°C)	30	5500.0034	5500	0.0034	0.6182
		T (°C)	40	5500.0044	5500	0.0044	0.8000
		T (°C)	50	5500.0058	5500	0.0058	1.0545
		T (°C)	60	5500.0094	5500	0.0094	1.7091
		T (°C)	70	5500.0012	5500	0.0012	0.2182
Limits				5500-5700 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5580MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5580.0022	5580	0.0022	0.3943
		V max (V)	5.75	5580.0121	5580	0.0121	2.1685
		V min (V)	4.25	5580.0061	5580	0.0061	1.0932
Limits				5500-5700 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5580MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5580.00260	5580	0.00260	0.4659
		T (°C)	-10	5580.00100	5580	0.00100	0.1792
		T (°C)	0	5580.01340	5580	0.01340	2.4014
		T (°C)	10	5580.00780	5580	0.00780	1.3978
		T (°C)	20	5580.00210	5580	0.00210	0.3763
		T (°C)	30	5580.00180	5580	0.00180	0.3226
		T (°C)	40	5580.00640	5580	0.00640	1.1470
		T (°C)	50	5580.00180	5580	0.00180	0.3226
		T (°C)	60	5580.00360	5580	0.00360	0.6452
		T (°C)	70	5580.01180	5580	0.01180	2.1147
Limits				5500-5700 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5700MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5700.0061	5700	0.0061	1.0702
		V max (V)	5.75	5700.0080	5700	0.0080	1.4035
		V min (V)	4.25	5700.0070	5700	0.0070	1.2281
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5700MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5700.0042	5700	0.0042	0.7368
		T (°C)	-10	5700.0035	5700	0.0035	0.6140
		T (°C)	0	5700.0076	5700	0.0076	1.3333
		T (°C)	10	5700.0049	5700	0.0049	0.8596
		T (°C)	20	5700.0056	5700	0.0056	0.9825
		T (°C)	30	5700.0017	5700	0.0017	0.2982
		T (°C)	40	5700.0127	5700	0.0127	2.2281
		T (°C)	50	5700.0066	5700	0.0066	1.1579
		T (°C)	60	5700.0133	5700	0.0133	2.3333
		T (°C)	70	5700.0045	5700	0.0045	0.7895
Limits				5725-5850 MHz			
Result				Complies			

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 5V
Test Mode:	TX (5.8G) Mode Frequency U-NII-3 (5745-5825MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5745.01340	5745	0.01340	2.3325
		V max (V)	5.75	5745.00330	5745	0.00330	0.5744
		V min (V)	4.25	5745.00250	5745	0.00250	0.4352
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5745.01010	5745	0.01010	1.7581
		T (°C)	-10	5745.00460	5745	0.00460	0.8007
		T (°C)	0	5745.01260	5745	0.01260	2.1932
		T (°C)	10	5745.01130	5745	0.01130	1.9669
		T (°C)	20	5745.01040	5745	0.01040	1.8103
		T (°C)	30	5745.00590	5745	0.00590	1.0270
		T (°C)	40	5745.00590	5745	0.00590	1.0270
		T (°C)	50	5745.00930	5745	0.00930	1.6188
		T (°C)	60	5745.01000	5745	0.01000	1.7406
		T (°C)	70	5745.00770	5745	0.00770	1.3403
Limits				5725-5850 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5785.00920	5785	0.00920	1.5903
		V max (V)	5.75	5785.00900	5785	0.00900	1.5557
		V min (V)	4.25	5785.01270	5785	0.01270	2.1953
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5785.00040	5785	0.00040	0.0691
		T (°C)	-10	5785.00100	5785	0.00100	0.1729
		T (°C)	0	5785.00290	5785	0.00290	0.5013
		T (°C)	10	5785.00900	5785	0.00900	1.5557
		T (°C)	20	5785.00660	5785	0.00660	1.1409
		T (°C)	30	5785.00640	5785	0.00640	1.1063
		T (°C)	40	5785.00200	5785	0.00200	0.3457
		T (°C)	50	5785.00600	5785	0.00600	1.0372
		T (°C)	60	5785.00050	5785	0.00050	0.0864
		T (°C)	70	5785.00210	5785	0.00210	0.3630
Limits				5725-5850 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5825.00440	5825	0.00440	0.7554
		V max (V)	5.75	5825.00770	5825	0.00770	1.3219
		V min (V)	4.25	5825.00520	5825	0.00520	0.8927
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5825.00730	5825	0.00730	1.2532
		T (°C)	-10	5825.01290	5825	0.01290	2.2146
		T (°C)	0	5825.00380	5825	0.00380	0.6524
		T (°C)	10	5825.00900	5825	0.00900	1.5451
		T (°C)	20	5825.00650	5825	0.00650	1.1159
		T (°C)	30	5825.00980	5825	0.00980	1.6824
		T (°C)	40	5825.00710	5825	0.00710	1.2189
		T (°C)	50	5825.00530	5825	0.00530	0.9099
		T (°C)	60	5825.01030	5825	0.01030	1.7682
		T (°C)	70	5825.01320	5825	0.01320	2.2661
Limits				5725-5850 MHz			
Result				Complies			

14. Duty Cycle Of Test Signal

14.1 Standard Requirement

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle. All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

14.2 Formula

Duty Cycle = Ton / (Ton+Toff)

14.3 Test Procedure

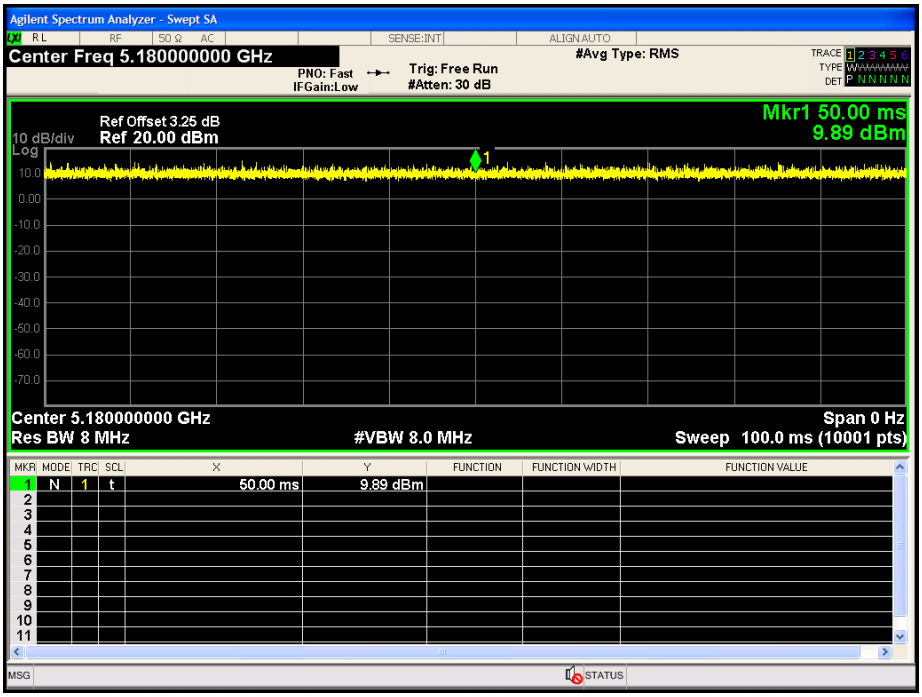
1.Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

14.4 Test Result

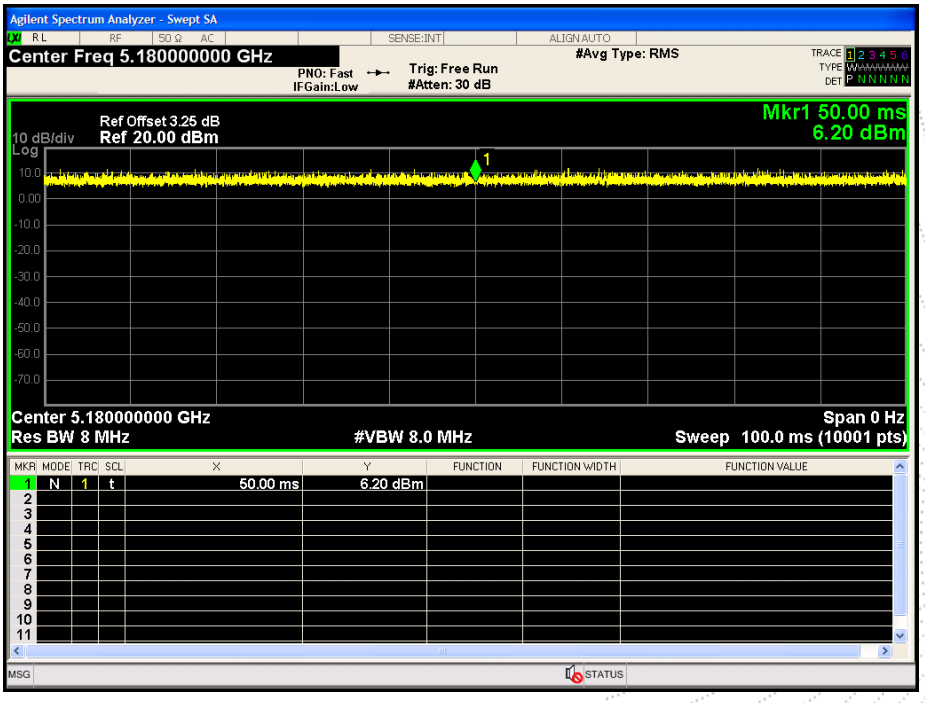
5.1G

Condition	Mode	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	100	0	0
NVNT	n20	100	0	0

a


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.180000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Ref Offset 3.25 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 50.00 ms
9.89 dBm
Center 5.180000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 100.0 ms (10001 pts)
1 N 1 t 50.00 ms 9.89 dBm

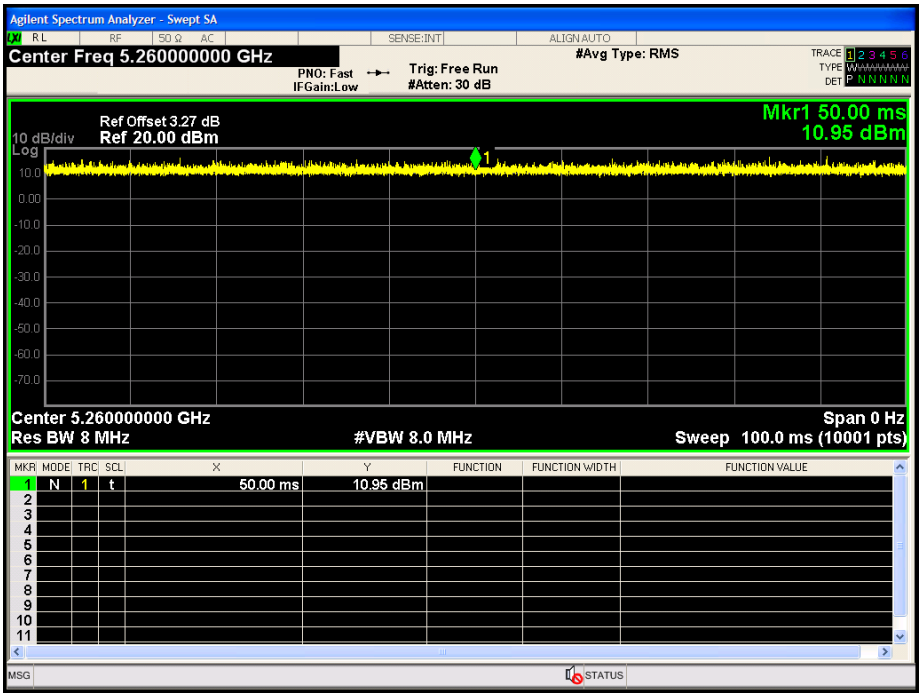
N20


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.180000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Ref Offset 3.25 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 50.00 ms
6.20 dBm
Center 5.180000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 100.0 ms (10001 pts)
1 N 1 t 50.00 ms 6.20 dBm

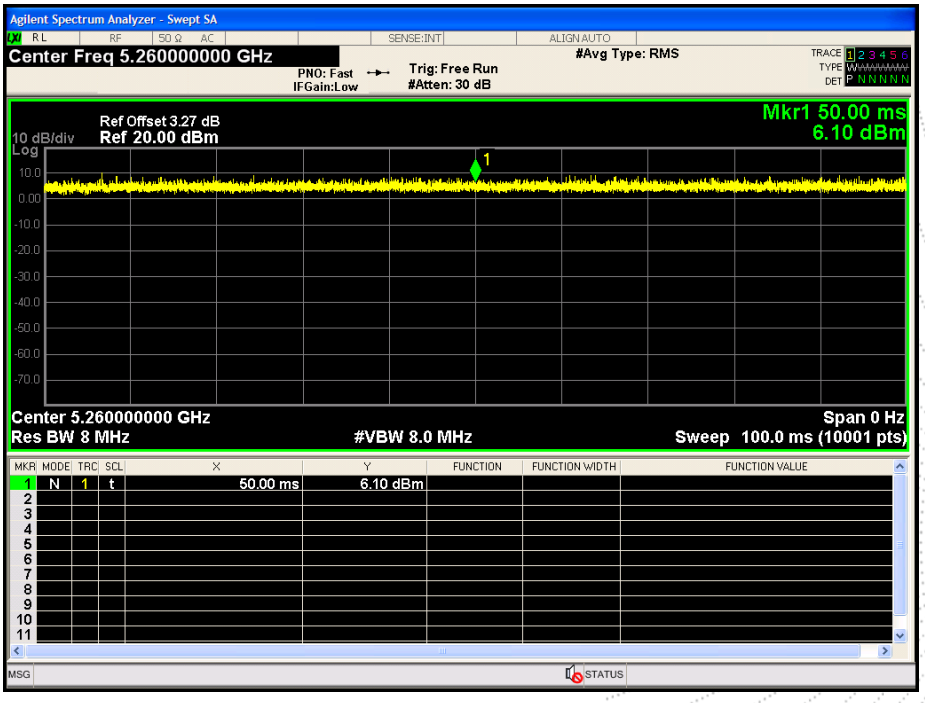
5.3G

Condition	Mode	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	100	0	0
NVNT	n20	100	0	0

a


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.260000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Ref Offset 3.27 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 50.00 ms
10.95 dBm
Center 5.260000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 100.0 ms (10001 pts)
1 N 1 t 50.00 ms 10.95 dBm

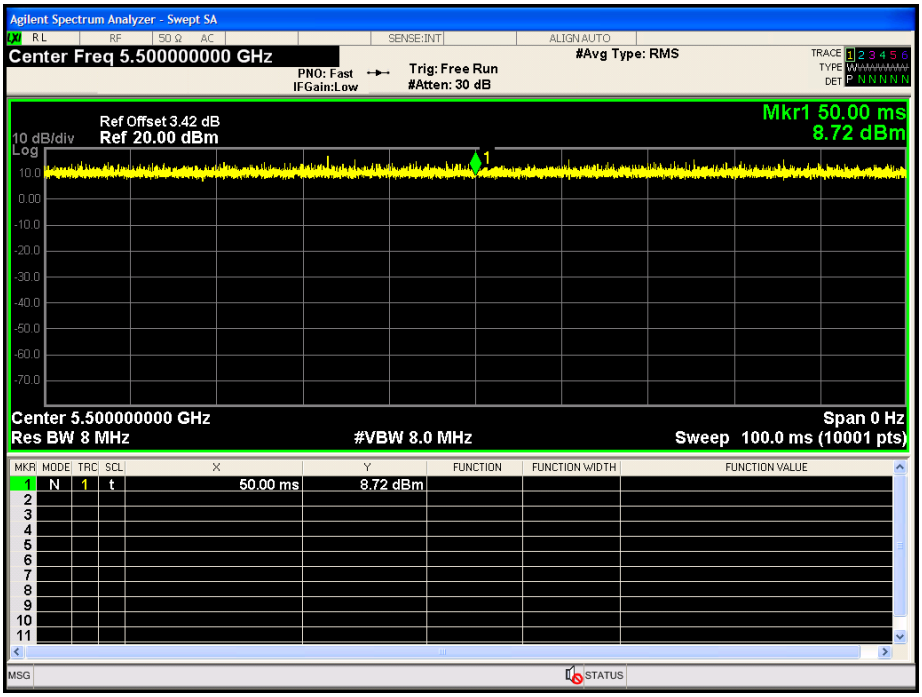
N20


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.260000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Ref Offset 3.27 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 50.00 ms
6.10 dBm
Center 5.260000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 100.0 ms (10001 pts)
1 N 1 t 50.00 ms 6.10 dBm

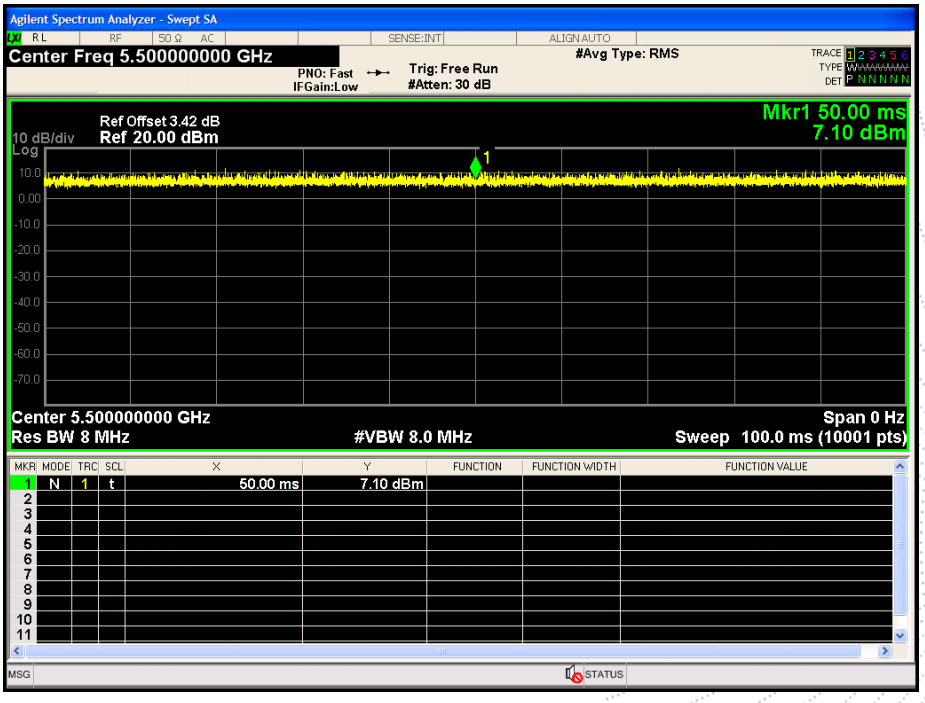
5.6G

Condition	Mode	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	100	0	0
NVNT	n20	100	0	0

a


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Ref Offset 3.42 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 50.00 ms
8.72 dBm
Center 5.500000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 100.0 ms (10001 pts)
1 N 1 t 50.00 ms 8.72 dBm

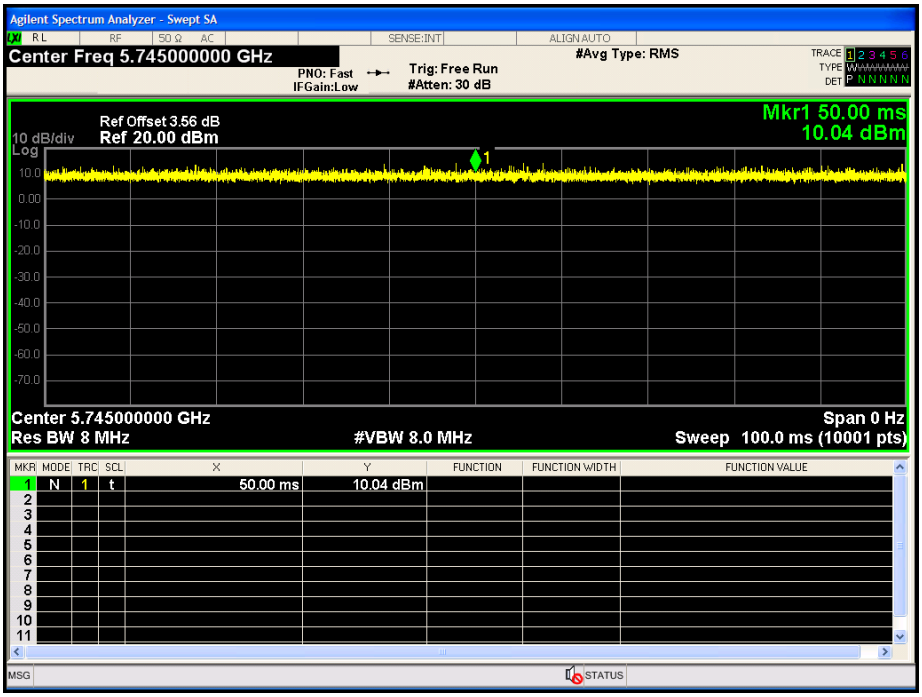
N20


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.500000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Ref Offset 3.42 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 50.00 ms
7.10 dBm
Center 5.500000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 100.0 ms (10001 pts)
1 N 1 t 50.00 ms 7.10 dBm

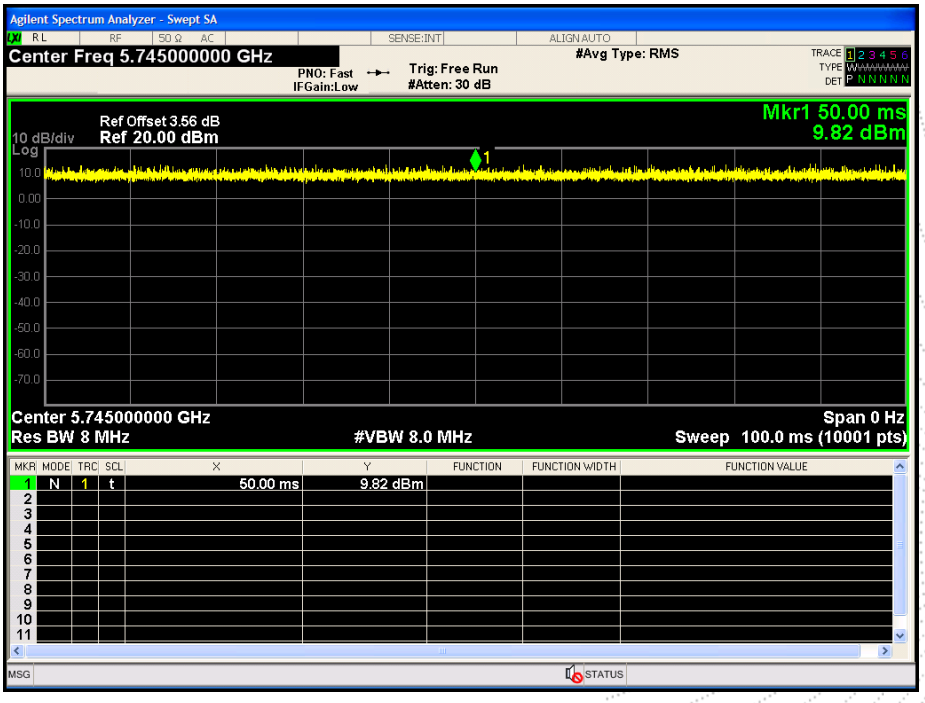
5.8G

Condition	Mode	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	100	0	0
NVNT	n20	100	0	0

a


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.745000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Ref Offset 3.56 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 50.00 ms
10.04 dBm
Center 5.745000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 100.0 ms (10001 pts)
1 N 1 t 50.00 ms 10.04 dBm

N20


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.745000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Ref Offset 3.56 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 50.00 ms
9.82 dBm
Center 5.745000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 100.0 ms (10001 pts)
1 N 1 t 50.00 ms 9.82 dBm

15. Antenna Requirement

15.1 Limit

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

15.2 Test Result

The EUT antenna is Internal antenna (antenna gain: 4.57 dBi). It comply with the standard requirement.

16. EUT Photographs

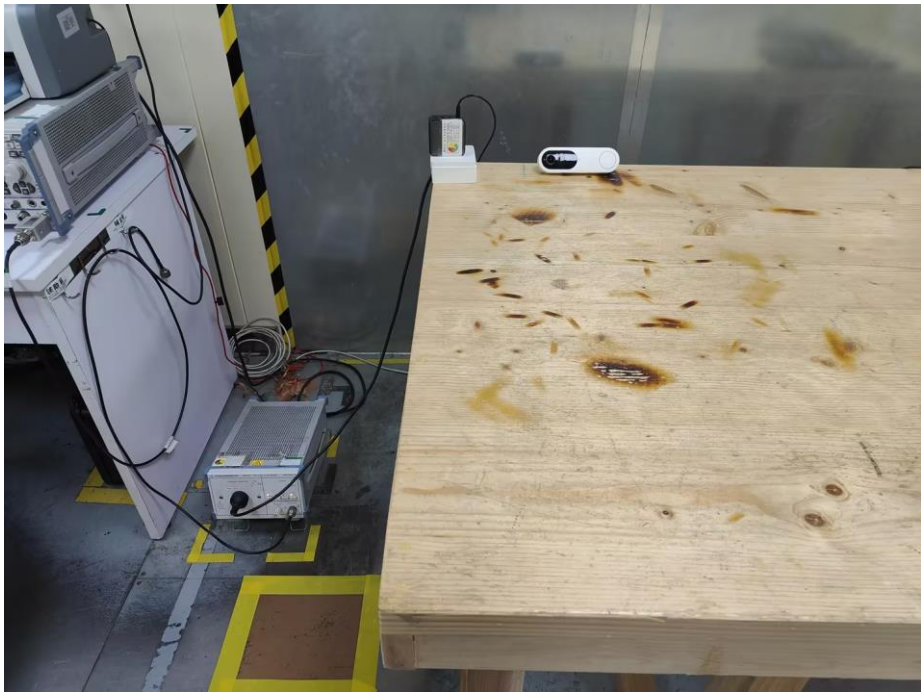
EUT Photo 1

EUT Photo 2

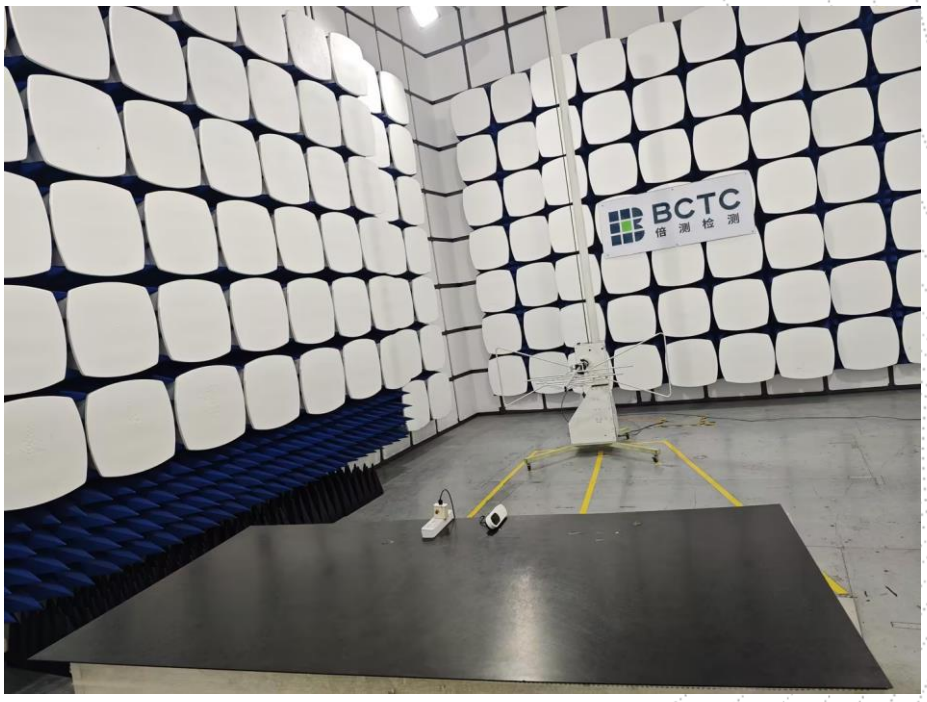
NOTE: Appendix-Photographs Of EUT Constructional Details

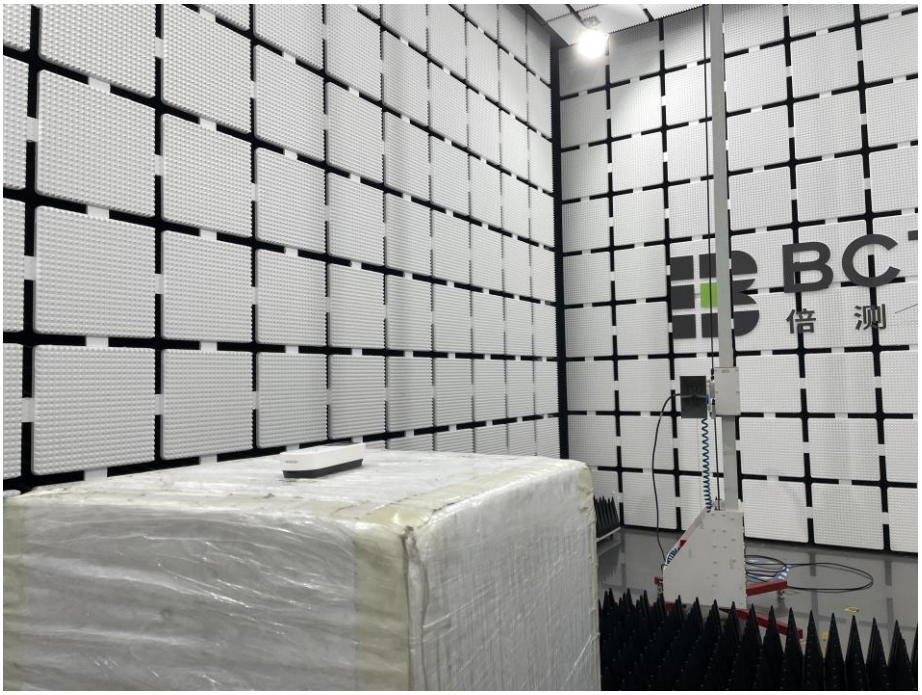
17. EUT Test Setup Photographs

Conducted Emissions Photo



Radiated Measurement Photos





STATEMENT

1. The equipment lists are traceable to the national reference standards.

2. The test report can not be partially copied unless prior written approval is issued from our lab.

3. The test report is invalid without the "special seal for inspection and testing".

4. The test report is invalid without the signature of the approver.

5. The test process and test result is only related to the Unit Under Test.

6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.

7. The quality system of our laboratory is in accordance with ISO/IEC17025.

8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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